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Report of the Commissioner of the Environment and Sustainable Development to the House of Commons

The Commissioner's Perspective

CHAPTER '

Kyoto Protocol Implementation Act

CHAPTER 2

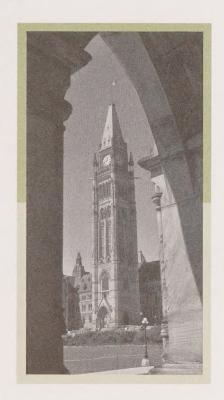
Meeting Canada's 2020 Climate Change Commitments

CHAPTER 3

Federal Contaminated Sites and Their Impacts









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To the Honourable Speaker of the House of Commons:

On behalf of the Auditor General of Canada, I have the honour to transmit herewith this Spring 2012 Report to the House of Commons, which is to be laid before the House in accordance with section 10.1 of the Kyoto Protocol Implementation Act.

Scott Vaughan

Commissioner of the Environment and Sustainable Development

OTTAWA, 8 May 2012



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The Commissioner's Perspective

Scott Vaughan Commissioner of the Environment and Sustainable Development

Two decades after the Earth Summit

Two decades have passed since the United Nations Conference on Environment and Development—commonly known as the Earth Summit—was held at Rio de Janeiro in Brazil. In the intervening years, much has been accomplished on the green agenda, from reducing some key air pollutants to applying new technologies such as satellite remote sensing to help us understand complex linkages within and between ecosystems.

Twenty years ago, one topic of debate that framed the Earth Summit was the relationship between economic growth and environmental protection. Some feared that controlling pollution or protecting forests would stifle economic growth, cripple productivity, and suffocate innovation. The debate was often referred to in shorthand as "jobs versus the environment."

With another meeting in Rio scheduled for June 2012 to mark the 20th anniversary of the Earth Summit, this is a good time to take stock of the jobs-versus-environment debate. Two chapters in this report examine the financial aspects of environmental issues. One deals with federal contaminated sites and the associated environmental liabilities faced by taxpayers, amounting to roughly \$7.7 billion. The other chapter addresses the costs of the government's approach to reducing greenhouse gas emissions through regulation.

Contaminated sites and environmental liabilities

The federal government is responsible for managing thousands of contaminated sites across Canada (Chapter 3, Federal Contaminated Sites and Their Impacts). The associated risks to human health and the environment are as varied as the contaminated sites themselves; these range from extremely large abandoned mines and nuclear waste dumps to hundreds of smaller sites, such as buried fuel tanks. The budget for managing the sites is approximately \$4 billion, and the funding is scheduled to end in 2020.

We report that the government has made progress in managing the Federal Contaminated Sites Inventory. About a third of the 22,000 sites have been closed; that is, they require no further action. Addressing the rest is likely to be a much tougher task, for several reasons. First, the remaining budget for assessing the environmental and human health risks of sites has shrunk by more than 60 percent, and so the capacity to identify new risks has dwindled. Second, the government has identified the sites where environmental and human health risks are greatest and has channelled the bulk of financial resources to the largest four, including Giant Mine in the Northwest Territories and low-level radioactive waste sites in Port Hope, Ontario. With available funding consumed by a few priority sites, it is not clear how the more than 10,000 other sites will be managed. Third, the total estimated financial liability for federal contaminated sites is about \$500 million higher than the amount of dedicated funding that remains. Finally, there is no lead agency accountable for managing this environmental liability across the federal government.

Some of the thousands of contaminated sites are a testament to poor planning, the failure of initial assessments to anticipate and avoid future environmental and human health problems, and a lack of ongoing mitigation to lower the environmental risks during operations. Many of the sites are buried and out of sight, but they will impose environmental and financial burdens on coming generations.

Design and cost of environmental regulations

Chapter 2 of this report, Meeting Canada's 2020 Climate Change Commitments, notes that the federal government is taking a sector-by-sector regulatory approach to reaching its national target of reducing greenhouse gas emissions to 17 percent below 2005 levels by 2020. In concrete terms, Canada will need to reduce emissions by 178 million tonnes over the next eight years to meet the 2020 target. In comparison, the 2011 Climate Change Plan for the Purposes of the *Kyoto Protocol Implementation Act* reported actual reductions totalling 6 million tonnes for 2008 and 2009.

While 2020 may seem far off, for many energy-intensive sectors it is tomorrow in terms of the lead time for making the necessary capital investments in new equipment to comply with regulations. The rollout of new regulations takes several years, given the time needed for their design, consultations, adjustments, implementation, and enforcement. It will take longer to realize actual emission reductions. Although the federal government has begun to lower greenhouse gas emissions,

right now the reductions are not happening fast enough to meet the 2020 target. I look forward to seeing the details of the sector-bysector approach as they are announced and implemented.

Policy coherence is important in the design of regulations, especially because the federal government's sector-by-sector strategy will involve all major sources of greenhouse gas emissions, from transportation and electricity generation to the oil and gas sector and the manufacturing sector. There are upstream and downstream linkages within and between key sectors, as well as a variety of provincial initiatives tackling greenhouse gas emissions. This makes it vital to have a coherent game plan ensuring that policies do not operate at cross purposes and instead work to reach least-cost emission reductions.

Decades of experience in environmental regulations show a range of approaches beyond the comparatively static command-and-control regulations. The one priority consistently expressed by business leaders is the need for regulatory predictability, allowing sufficient time to invest in new equipment. Businesses also need the flexibility to identify cost-effective, efficient ways of complying with regulations. The record shows that they have found more innovative and less expensive ways than anyone in Ottawa could have envisaged at the time the regulations were drafted.

The overall design of regulations is therefore important. Here, some useful lessons can be drawn from the climate approaches of the United States, with which Ottawa has said it will align when appropriate. The US Environmental Protection Agency often uses different kinds of environmental regulations that set clear ceilings on allowable emissions. Under those ceilings, however, businesses have flexibility to meet standards in ways that they find cost-effective.

The question of economic cost is crucial. The government's stated rationale for withdrawing from the Kyoto Protocol was the prohibitive projected cost to the economy, estimated at \$14 billion in December 2011. Accordingly, I expected that the government would have calculated the projected costs to the Canadian economy of its regulatory approach to meeting its new target of reducing greenhouse gases by 17 percent below our 2005 level by 2020. Right now, it has not done so. The result is that Parliament lacks a full picture of the combined costs of reaching the 2020 target.

Business and the environment

The past 20 years have seen considerable progress in identifying the economic cost of various environmental regulations. That brings us back to the jobs-versus-environment debate to look at how some businesses view and act on the changing green agenda.

It would be reasonable to expect a pushback against environmental protection from most businesses, given the global economic recession of recent years. However, a different picture emerges from the results of a 2011 global survey of business executives, conducted by the MIT Sloan Management Review and the Boston Consulting Group. The survey involved 3,000 executives in over 100 countries. As reported in Sustainability Nears a Tipping Point (January 2012), 70 percent of respondents said that sustainability had a permanent place on their business agenda—an increase over the previous year. Most business leaders said that environmental issues mattered to them because of competition and corporate reputation in the global marketplace. One third said that adding sustainability to their corporate goals had strengthened bottom-line profitability.

There is no question that environmental protection has economic costs: an average of 1 to 2 percent of a firm's total costs, according to estimates by the Organization for Economic Cooperation and Development. Within that range, environmental compliance costs can vary widely. They are highest for the petroleum and coal sectors, followed by energy-intensive sectors such as primary metals and cement. For the services sector, however, costs are lower. While 1 or 2 percent might not seem like much, estimates by Statistics Canada show that in 2008, Canadian businesses spent over \$9 billion on environmental protection, mostly to deal with pollutants after they had been generated.

It is no surprise that businesses are constantly finding ways to lower costs while meeting regulatory or other environmental targets. According to an analysis by Harvard Business School's Michael Porter, one of the world's leading authorities on business competitiveness, firms that meet stringent environmental regulations tend to have higher rates of innovation and productivity than industries that do not comply with those regulations. Porter's explanation is simple: pollution, inefficient energy systems, and industrial waste all represent wasted profits. Firms that reduce pollution are more often productive, innovative, and competitive. In a 2010 report by the Canadian Council of Chief Executives, Canadian business leaders said that in terms of the bottom line, it makes sense to improve energy efficiency.

In recent years, a growing number of Canadian companies have integrated green policies and procedures into their operations. More than 20 years ago, the Royal Bank of Canada was among the first Canadian banks to adopt an environmental policy. Since then, every major Canadian bank has adopted its own environmental procedures and subscribed to various national and international initiatives, including the Carbon Disclosure Project to measure their carbon footprint, the Equator Principles that set out measurable guidelines for environmental and social lending, and the UN Environment Programme's Finance Initiative. In the insurance sector, firms such as The Co-operators and others have adopted climate change policies because of growing trends in climate-related insurance losses. Some international companies, including Apple, have established environmental and social targets for all aspects of operations, and are using audits to improve the performance of their global suppliers.

In the forestry sector, associations such as the Forest Products Association of Canada have set ambitious goals to increase third-party certification in the advancement of sustainable forestry. In the retail food services area, Loblaw Companies and many others are providing a wider range of sustainably harvested produce, while Tim Hortons has company-wide targets to advance the sustainability of operations, including recycling programs and green building designs. In the pulp and paper sector, companies such as Cascades use recycled fibres as raw materials.

Measuring costs and benefits

What has also changed in the past 20 years is the way that upfront economic costs of regulatory compliance have come to be considered alongside the direct and longer-term societal benefits of a cleaner environment. The White House Office of Management and Budget looked at how the costs and benefits of environmental protection compare. It found that the combined costs of all US federal clean air and water regulations between 1999 and 2009 were between \$26 and \$29 billion a year. At the same time, it found between \$82 and \$533 billion in annual benefits—including lower costs for treating fewer diseases, such as smog-related respiratory illnesses.

Similarly, a recent study by the New York Academy of Sciences found that the damage costs from coal-fired electricity in the United States were approximately \$345 billion a year. The costs included the combined impacts of aerosolized, solid, and water pollutants associated

with the mining, processing, transport, and combustion of coal, and the impact of those pollutants on families and communities.

There have been different approaches to measuring the broader benefits of a clean and healthy environment—for example, complementing standard economic statistics with different indicators to measure the cost of pollution damages and the value of cleaner air, national parks, and clean water. Statistics Canada remains a leader in this area, while the Canadian Index of Wellbeing continues to make a valuable contribution to measuring different values.

Some look to the June 2012 Rio+20 Conference to find new ways of supporting innovative statistical approaches. The conference includes proposals from the government of the United Kingdom and others to advance environmental and social statistics with the aim of complementing measurements of gross domestic product. It will be interesting to see how actual business experience, and more inclusive measurement of the costs and benefits of environmental protection, continue to change the jobs-versus-environment debate.

CHAPTER 1

Kyoto Protocol Implementation Act

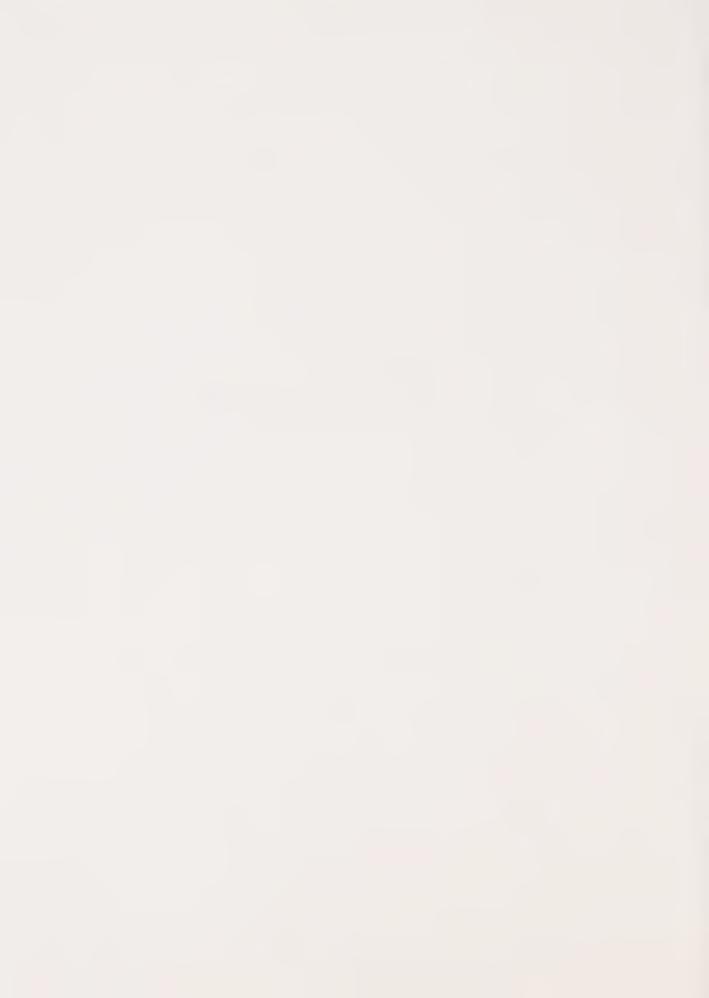


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Kyoto Protocol Implementation Act

Main Points

What we examined

Parliament passed the *Kyoto Protocol Implementation Act* in 2007 to ensure that Canada would take effective and timely action to meet its commitments and obligations under the 1997 Kyoto Protocol. The Act required that the government publish annual climate change plans describing the measures it would take to achieve the Kyoto Protocol target—that is, to reduce greenhouse gas (GHG) emissions to an average of 6 percent below their 1990 level during the Kyoto commitment period, from 2008 to 2012.

Environment Canada is responsible for preparing the annual climate change plans under the *Kyoto Protocol Implementation Act*; and from 2007 to 2011, it published five plans. As the Act requires of the Commissioner of the Environment and Sustainable Development, we audited progress in implementing the government's climate change plans and whether Canada is on track to meet its Kyoto Protocol obligations. This report is our third and final audit under this mandate, which required us to report every two years up to and including 2012.

Audit work for this chapter was substantially completed on 21 February 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

Climate change has far-reaching impacts on Canada's economy, infrastructure, and natural environment, and on human health. Recent reports by the federal government indicate that every region of Canada has already been affected by the changing climate; in particular, Canadian communities and critical infrastructure are vulnerable to extreme weather events, such as drought, heat waves, flooding, and coastal storms.

Although the Government of Canada has announced that it will withdraw from the Kyoto Protocol, the Kyoto Protocol Implementation Act remains in effect as an Act of Parliament, and obligations for the Commissioner set out in that Act remain. In addition, the Government of Canada remains a Party to the United Nations

Framework Convention on Climate Change and as such remains subject to various reporting mechanisms, including the annual National Inventory Report on GHG emissions.

What we found

- The 2011 climate change plan provides more information than previous plans. Furthermore, this plan is more explicit than previous plans, as it organizes information on each measure by the requirements set out in subsection 5(1) of the Act.
- The 2011 plan estimates total emission reductions expected for the period 2008–2012 at 27 million tonnes. This estimate has significantly declined since the 2007 plan estimated an expected emission reduction of 282 million tonnes during the same period. According to the 2011 plan, actual reductions in 2008 and 2009 totalled 6 million tonnes.
- Although Environment Canada has provided more information in the 2011 climate change plan where possible, the plan still does not meet the requirements of the Act because the measures it describes will not ensure that Canada meets its greenhouse gas emission reduction obligations under Article 3, paragraph 1, of the Kyoto Protocol.
- If all the measures in the annual climate change plan had been implemented and the total expected reductions in the plan had been achieved, it would still not have been sufficient to meet the government's Kyoto Protocol target. To meet the target, GHG emissions would have to be reduced by an additional 805 million tonnes by 2012.

Introduction

- 1.1 The Kyoto Protocol was adopted under the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 and contains legally binding commitments for countries to reduce and limit greenhouse gas (GHG) emissions. In 2007, Canada enacted the Kyoto Protocol Implementation Act to ensure that Canada takes effective and timely action to meet its obligations under the Kyoto Protocol. The Act requires that the government publish annual climate change plans that describe the measures it intends to take to achieve the emissions target it has committed to under the Kyoto Protocol. That commitment was to reduce GHG emissions to an average of 6 percent below their 1990 level during the five-year Kyoto commitment period from 2008 to 2012. Environment Canada has published five plans to date, one for each year from 2007 to 2011.
- 1.2 In December 2011, the Minister of the Environment announced that Canada would be withdrawing from the Kyoto Protocol. This withdrawal is to become effective on 15 December 2012, in accordance with Article 27(2) of the Kyoto Protocol. The Government of Canada has stated that it will, however, remain a Party to the UNFCCC and will continue to prepare the annual National Inventory Report on Canada's GHG emissions.

Mandate of the Commissioner of the Environment and Sustainable Development

1.3 Subsection 10.1(1) of the Kyoto Protocol Implementation Act requires the Commissioner of the Environment and Sustainable Development to report on progress made in meeting the requirements of the Act:

At least once every two years after this Act comes into force [22 June 2007], up to and including 2012, the Commissioner of the Environment and Sustainable Development shall prepare a report that includes

- (a) an analysis of Canada's progress in implementing the Climate Change Plans;
- (b) an analysis of Canada's progress in meeting its obligations under Article 3, paragraph 1, of the Kyoto Protocol; and
- (c) any observations and recommendations on any matter that the Commissioner considers relevant.

National Inventory Report—An annual inventory published by Environment Canada on behalf of the Government of Canada that provides information regarding greenhouse gas emission levels in Canada. The United Nations Framework Convention on Climate Change specifies reporting requirements for the inventory.

Observations

- 1.4 The purpose of the Kyoto Protocol Implementation Act is to "ensure that Canada takes effective and timely action to meet its obligations under the Kyoto Protocol." Since 2007, Environment Canada has published five climate change plans in accordance with its obligations under the Act.
- 1.5 We analyzed the 2011 climate change plan as well as other documents prepared by Environment Canada, including the 2011 National Inventory Report, to determine if the plans contained all the information required under subsection 5(1) of the Act. We also examined whether Environment Canada had prepared and implemented a plan to meet Canada's obligations to reduce greenhouse gas (GHG) emissions under the Kyoto Protocol.

Climate change plan

The 2011 climate change plan is more complete than previous plans

- 1.6 The 2011 climate change plan identifies 20 federal government measures intended to reduce greenhouse gas (GHG) emissions. Environment Canada expects that the measures will reduce emissions by 27 million tonnes during the Kyoto commitment period (2008 to 2012). Environment Canada indicates that actual emission reductions total 6 million tonnes for 2008 and 2009, the most recent years for which actual emissions have been published (Exhibit 1.1).
- 1.7 The 2011 climate change plan is more explicit than previous plans published under the *Kyoto Protocol Implementation Act*, as it organizes information for each measure by the requirements set out in subsection 5(1) of the Act. Our audit found that the 2011 climate change plan includes more of the information required under subsection 5(1) of the Act than did the previous plans (Exhibit 1.2). For example, in the 2007 climate change plan, only one measure included a date on which it would come into effect (as required under subsection 5(1)(b)(i) of the Act), while in the 2011 plan, all measures included this information. In the 2008 climate change plan, only 20 percent of the measures included a statement indicating whether each measure had been implemented by the date projected (as required under subsection 5(1)(f) of the Act). The 2011 plan included such statements for all measures.

Exhibit 1.1 Measures identified in the 2011 climate change plan included expected and actual greenhouse gas emission reductions (million tonnes)

	Greenhouse gas emission reduction					
	Actual			Expected		Total reductions
Measures	2008	2009	2010	2011	2012	2008-2012
Strengthening Energy Efficiency Standards	0.09	0.22	0.61	1.05	1.42	3.39
Reducing Greenhouse Gas Emissions from New Cars and Light Trucks	0	0	0.07	0.22	0.45	0.74
Regulating Renewable Fuels Content	0	0	0.03	1.3	1.65	2.98
Pulp and Paper Green Transformation Program	0	0	0.02*	0.41	1.09	1.52
ecoENERGY for Renewable Power	1.13	2.19	3.9	5.6	6.0	18.82
ecoENERGY for Renewable Heat	0.004	0.01	0.02	0.03	0.03	0.094
ecoENERGY for Buildings and Houses	0.58	0.99	1.4	1.66	1.97	6.6
ecoENERGY Retrofit Initiative	0.29	0.66	1.23	1.3	1.3	4.78
ecoENERGY for Industry	0.64	1.02	1.43	1.54	1.54	6.17
ecoENERGY for Aboriginal and Northern Communities	0	0.001	0.002	0.003	0.009	0.015
ecoAUTO Rebate Program	0.01	0.01	0.01	0.01	0.01	0.05
Green Levy	0.1	0.14	0.17	0.2	0.23	0.84
ecoENERGY for Personal Vehicles Program	0.08	0.14	0.2	0.21	0.21	0.84
ecoMOBILITY	0	0	0.11	0.11	0.11	0.33
National Vehicle Scrappage Program	0.001	0.012	0.019	0.011	0	0.043
ecoTECHNOLOGY for Vehicles Program	0	0.07**	0.1	0.15	0.2	0.52
ecoENERGY for Fleets Program	0.13	0.26	0.38	0.41	0.41	1.59
ecoFREIGHT Program	0	0.98**	1.12	1.25	1.37	4.72
Marine Shore Power Program	0	0.003**	0.004	0.004	0.004	0.015
Promoting Sustainable Urban Transit	0.03	0.03	0.03	0.03	0.03	0.15
Total reductions calculated with an integrated model***	2	4	5	7	9	27

^{*} Actual emissions

^{**} Expected emissions

^{***} These numbers are not sums, but were calculated by Environment Canada using its integrated Energy, Emissions and Economy Model for Canada.

Source: Environment Canada's Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act (2011); as compiled by Environment Canada

The 2011 climate change plan contained more of the information required by the Kyoto Protocol Implementation Act than previous plans

	Reports of the Commissioner of the Environment and Sustainable Development				
Requirements of the Kyoto Protocol Implementation Act, subsection 5(1)	Observations in the 2009 report, Chapter 2, about the 2007 and 2008 Climate Change Plans	Observations in the 2011 report, Chapter 1, about the 2009 and 2010 Climate Change Plans	Observations in the 2012 report, Chapter 1, about the 2011 Climate Change Plan		
5(1) Within 60 (not later than May 31 of every year therea mate Change Plan that includes	after until 2013,		
(a) a description of the measures to be taken to ensure that Canada meets its obligations under Article 3, paragraph 1, of the Kyoto Protocol	The plans included measures under each category.	 The plans included 19 measures with expected greenhouse gas (GHG) emission reductions. A description was provided for each measure. Neither the 2009 nor the 2010 plan indicated that these measures were designed to ensure that Canada meets its obligations under the Kyoto Protocol. 	 The 2011 climate change plan contained 20 measures to reduce GHG emissions. A description was provided for each measure. These measures in the 2011 plan will not ensure that Canada meets its obligations under the Kyoto Protocol. 		
(b) for each measure referred to in paragraph (a), (i) the date on which it will come into effect, and (ii) the amount of greenhouse gas emission reductions that have resulted or are expected to result for each year up to and including 2012, compared to the levels in the most recently available emission inventory for Canada;	 The dates (month, year) on which a measure will come or has come into effect are provided for 8 of 19 measures in the 2008 plan. The 2007 plan included a date for only 1 of the 19 measures reported. The plans did not compare GHG reductions for each measure with the most recently available emissions data for Canada. 	 In the 2010 plan, all measures included a date when the measure would come into effect. In the 2009 plan, 10 of 19 measures reported an effective date. The 2009 and 2010 plans each identified 19 measures with expected GHG emission reductions. 	All 20 measures listed a date when they will come into effect and their actual or expected GHG emission reductions.		
(c) the projected greenhouse gas emission level in Canada for each year from 2008 to 2012, taking into account the measures referred to in paragraph (a), and a comparison of those levels with Canada's obligations under Article 3, paragraph 1, of the Kyoto Protocol;	The plans present the projected total GHG emission levels for Canada during the Kyoto period. However, the plans do not compare these emission levels with Canada's obligations under Article 3, paragraph 1, of the Kyoto Protocol.	The projected GHG emission level for each year from 2008 to 2012 was provided in both the 2009 and 2010 plans; however, the levels were not explicitly compared by year with Canada's obligation under Article 3, paragraph 1, of the Kyoto Protocol.	The projected GHG emission level for each year was provided in the 2011 plan; however, the levels were not explicitly compared by year with Canada's obligation under Article 3, paragraph 1, of the Kyoto Protocol.		

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Exhibit 1.2 The 2011 climate change plan contained more of the information required by the Kyoto Protocol Implementation Act than previous plans (continued)

	Reports of the Cor	nmissioner of the Environment and Sustai	nable Development	
Requirements of the Kyoto Protocol Implementation Act, subsection 5(1)	Observations in the 2009 report, Chapter 2, about the 2007 and 2008 Climate Change Plans	Observations in the 2011 report, Chapter 1, about the 2009 and 2010 Climate Change Plans	Observations in the 2012 report, Chapter 1, about the 2011 Climate Change Plan	
5(1) Within 60		not later than May 31 of every year there imate Change Plan that includes	after until 2013,	
(d) an equitable distribution of greenhouse gas emission reduction levels among the sectors of the economy that contribute to greenhouse gas emissions;	The plans do not describe how they address equitable distribution.	The 2009 and 2010 climate change plans indicated that an analysis had been conducted, and it was determined that there would not be any notable inequities among economic sectors that contribute to GHG emissions. However, we found this conclusion difficult to confirm with the information provided in the plans.	The 2011 climate change plan indicated that an analysis had been conducted, and it was determined that there would not be any notable inequitie among economic sectors that contribute to GHG emissions. However, we found this conclusion difficult to confirm with the information provided in the plans.	
		• In our view, the information in the 2009 and 2010 plans on the equitable distribution of GHG emission reductions does not satisfy the requirement of subsection 5(1)(d) of the Act.	• In our view, the informatio in the 2011 plan on the equitable distribution of GHG emission reductions does not satisfy the requirement of subsection 5(1)(d) of the Act.	
(e) a report describing the implementation of the Climate Change Plan for the previous calendar year; and	Information provided is inconsistent; however, information is provided for all 19 measures in the 2008 plan.	The majority of measures included a report describing what had been implemented in the previous year; however, about a quarter of the measures did not provide sufficient detail to be considered as having met this requirement.	All measures in the 2011 plan included a report for the implementation of the plan for the previous calendar year.	
 (f) a statement indicating whether each measure proposed in the Climate Change Plan for the previous calendar year has been implemented by the date projected in the Plan and, if not, an explanation of the reason why the measure was not implemented and how that failure has been or will be redressed. A clear statement of whether a measure has been implemented by the date projected is provided for about 20 percent of the measures. 		The majority of measures listed in both the 2009 and 2010 plans indicate that the measures were implemented by the date projected. The 2010 plan did not describe how the failure to implement the Regulatory Framework for Industrial Greenhouse Gas Emissions, which was to account for over 85 percent of the GHG emission reductions in the 2009 plan, would be redressed.	All measures in the 2011 plan indicated that they were implemented by the date projected.	

- 1.8 There are key differences between the 2011 plan and previous plans in terms of both the completeness of information presented as well as what the measures in the plans are expected to achieve:
 - All measures included in the 2011 plan stated that they are expected to contribute to GHG emission reductions during the Kyoto commitment period (2008 to 2012). Previous plans contained up to a dozen measures that did not state emission reductions expected during the Kyoto commitment period.
 - The 2011 climate change plan did not present any financial information regarding the funding allocated and spent on measures to reduce GHG emissions. Our last audit observed that although over \$9 billion had been allocated to the measures listed in the 2010 climate change plan, financial information was not reported consistently. We recommended that financial information, including funds allocated and spent, be reported for all measures in the annual climate change plans.
 - The total expected emission reductions outlined in the 2011 plan for 2008 to 2012 are 27 million tonnes. The 2007 climate change plan expected to reduce emissions during the commitment period by an estimated 282 million tonnes. Compared with 2007, the 2011 climate change plan shows a 90 percent decrease in expected emission reductions.

Environment Canada's 2011 climate change plan has not met the requirements of the *Kyoto Protocol Implementation Act*

- 1.9 Although we noted improvements since our last audit, we found that the 2011 climate change plan did not
 - describe measures to be taken to ensure that Canada meets its Kyoto Protocol obligations,
 - explicitly compare expected emission levels by year with Canada's GHG emission obligation in the Kyoto period, and
 - include an adequate explanation of how the government calculated an equitable distribution of GHG emission reductions among economic sectors.
- 1.10 Since our first audit of Environment Canada's climate change plans, in 2009, we have made nine recommendations to the Department and other responsible departments. These recommendations are listed in the Appendix and ranged from including in the plans all of the information required by the Act, to more effectively quantifying expected and actual GHG emissions and

financial information. Environment Canada agreed with all but two of our recommendations and took steps to address them. For example, we found in our 2011 audit that Environment Canada made progress in ensuring that uncertainties regarding the quantification of expected emissions were explicit in its reporting (Appendix).

1.11 Overall, on recommendations that could be satisfied by providing additional information, Environment Canada has made progress. However, because the 2011 plan does not describe measures that will ensure that Canada meets its Kyoto Protocol obligations, the plan does not fully satisfy our recommendations or the requirements of subsection 5(1) of the Kyoto Protocol Implementation Act.

Emissions target

Canada will not meet its greenhouse gas emissions target initially agreed to under the Kyoto Protocol

- 1.12 Ultimately, it is the United Nations Framework Convention on Climate Change (UNFCCC) review and compliance system established under the Kyoto Protocol that will determine, in 2015 and 2016, if Canada and other countries have met their obligations under the protocol. It is not clear how the UNFCCC will assess Canada's progress given that Canada has announced its withdrawal from the Kyoto Protocol. However, the Kyoto Protocol states that "each Party . . . shall, by 2005, have made demonstrable progress in achieving its commitments under this Protocol." Therefore, as in our last audit, we assessed whether Canada was on track to meet its Kyoto Protocol greenhouse gas (GHG) emissions target.
- 1.13 Article 3, paragraph 1, of the Kyoto Protocol requires that, between 2008 and 2012, Canada's average GHG emission level should be at least 6 percent below its 1990 emission level. More specifically, this means that for this five-year period, total GHG emissions in Canada should not exceed 2,792 million tonnes. Given the actual emissions for 2008 and 2009 (732 and 690 million tonnes, respectively) as well as the reductions anticipated from the measures in the 2011 plan, GHG emissions are expected to be some 805 million tonnes above Canada's Kyoto Protocol target of 2,792 million tonnes during the 2008 to 2012 period.
- 1.14 The 2011 climate change plan states that measures in the plan are expected to reduce GHG emissions by 27 million tonnes over the Kyoto period, and that actual GHG reductions totalled 4 million tonnes in 2009 and 2 million tonnes in 2008. Even if all the measures in the 2011 climate change plan are implemented as planned and achieve the total expected GHG emission reductions, it will not be

sufficient to meet the government's Kyoto Protocol target. Therefore, Canada will not meet its GHG emissions target initially agreed to under the Kyoto Protocol and the Kyoto Protocol Implementation Act.

Conclusion

- 1.15 Environment Canada, on behalf of the Minister of the Environment, is responsible for the preparation of the annual climate change plans for the purposes of the *Kyoto Protocol Implementation Act*. Environment Canada has made improvements in reporting requirements in response to recommendations from our 2009 and 2011 audits. These improvements have contributed to a more complete and explicit plan in 2011 as compared with previous plans. However, the 2011 plan is still missing several key elements.
- 1.16 In substance, the 2011 plan does not contain measures with greenhouse gas (GHG) emission reductions sufficient to achieve the level required to meet the obligations of the Kyoto Protocol or the Kyoto Protocol Implementation Act. According to the 2011 plan, actual reductions in 2008 and 2009 totalled 6 million tonnes. To meet the target, GHG emissions would have to be reduced by an additional 805 million tonnes by 2012.
- 1.17 Although Environment Canada has provided more information in the 2011 climate change plan where possible, the plan does not meet the requirements of the Act because its measures will not ensure that Canada meets its GHG emission reduction obligations under Article 3, paragraph 1, of the Kyoto Protocol.

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About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The objective of our audit was to determine whether Environment Canada has prepared and implemented annual climate change plans that meet Canada's greenhouse gas emission reduction obligations under Article 3, paragraph 1, of the Kyoto Protocol (an average of 6 percent below its 1990 level, to be achieved between 2008 and 2012).

Scope and approach

The audit was conducted pursuant to the requirements of the *Auditor General Act* as well as those of the *Kyoto Protocol Implementation Act*, which came into force on 22 June 2007. These requirements are described in subsection 10.1(1) of the Act and provide that we report on progress in implementing the climate change plans and in meeting the Kyoto Protocol obligations as well as any other matters we consider relevant. Although the government announced on 12 December 2011 that it would withdraw from the Kyoto Protocol, our mandate to conduct this audit remains in place as a result of the Act.

Environment Canada is the entity under audit for this topic due to its responsibilities under the Kyoto Protocol Implementation Act, the United Nations Framework Convention on Climate Change, and the Federal Sustainable Development Strategy.

Other federal departments are involved in implementing measures identified in the climate change plans and in meeting Canada's Kyoto target. However, they were not included in this audit.

We interviewed key departmental officials in the National Capital Region. We also interviewed other stakeholders, consulted with experts in the field, and reviewed documentation supplied to us by Environment Canada.

Criteria

Criteria	Sources		
To determine whether Environment Canada has annual climate change plans that meet Canada's greenhouse gas emission reduction obligations under the Kyoto Protocol, we used the following criteria:			
The 2011 climate change plan fulfills the requirements of subsection 5(1) of the Kyoto Protocol Implementation Act.	Kyoto Protocol Implementation Act		
The climate change plans that Environment Canada prepares include measures designed to ensure that Canada meets its obligations under Article 3, paragraph 1, of the Kyoto Protocol.	Kyoto Protocol Implementation Act Kyoto Protocol		
The National Inventory Report indicates that Canada is on track to reduce its emissions to an average of 6 percent below its 1990 level during the five-year Kyoto commitment period (2008 to 2012).	Kyoto Protocol Implementation Act Kyoto Protocol United Nations Framework Convention on Climate Change		

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The period covered by this audit was May 2007 to December 2011. Although this audit focuses specifically on the 2011 climate change plan, climate change plans have been published annually since 2007, and the commitment period for the Kyoto Protocol is 2008 to 2012. Audit work for this chapter was substantially completed on 21 February 2012.

Audit team

Principal: Kimberley Leach

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Appendix List of all recommendations made in audits under the Kyoto Protocol Implementation Act

2009 Spring Report, Chapter 2, K	yoto Protocol Implementation Act	2011 October Report, Chapter 1, Climate Change Plans under the Kyoto Protocol Implementation Act
Recommendations	Response to recommendations (summary)	Follow-up on recommendations
2.9 Environment Canada should ensure that the next annual climate change plan fulfills all the requirements of subsection 5(1) of the Kyoto Protocol Implementation Act	Environment Canada accepts this recommendation. Environment Canada will provide further detail regarding effective dates, timelines, and descriptions of program implementation. Further, Environment Canada will more clearly provide a direct comparison of the projected greenhouse gas emission levels for the Kyoto period with Canada's obligations under the Kyoto Protocol. Environment Canada will consider providing additional information on how it arrived at the conclusions on measures regarding just transition for workers and equitable distribution among sectors.	Environment Canada has made some improvements in the completeness and transparency of the information container in the climate change plans since 2007. However, the plans are not in compliance with the Act because required information is missing and the measures contained in the plans are not sufficient to achieve the Kyoto Protocol obligations to reduce greenhouse gas (GHG) emissions.
2.19 In accordance with the Kyoto Protocol Implementation Act, the projected greenhouse gas emission levels in Canada for each year from 2008 to 2012 should be reported for each measure in the annual climate change plan. Environment Canada should state its expected greenhouse gas emission reductions for the Regulatory Framework for Industrial Greenhouse Gas Emissions in the years that they are most likely to actually occur, rather than in the years that the payment is made to the technology fund and other compliance mechanisms. If this is not done, the Department should explain why in the next plan.	Environment Canada does not accept the recommendation at this time and will explain its approach more completely in the next plan. The Regulatory Framework provides a number of options to industry for meeting these obligations. Therefore, actual inyear reductions may vary from the plan's estimates, depending on the specific compliance options chosen by individual firms. Because the Framework is market-based, it is not possible to establish with certainty which options will be most used by industry, and any such estimate would be heavily dependent on a variety of technical assumptions. However, beginning with the 2009 climate change plan, Environment Canada proposes to explore providing a range of estimates for actual in-year reductions.	We did not follow up on this recommendation. The Regulatory Framework for Industrial Greenhouse Gas Emissions was not implemented and therefore was not included in climate change plans published after 2009.
2.28 Environment Canada and other responsible departments should describe in the annual climate change plans the quantitative or qualitative uncertainties related to the expected GHG emission reductions of each measure. A range of potential emission reduction levels should be presented for the annual plans as a whole and for the individual measures where possible.	Environment Canada accepts this recommendation. Environment Canada will work with other responsible departments to investigate options for presenting a range of expected emissions reductions where feasible and will consider including this information in the plans, beginning with the next plan in 2009.	Environment Canada and other responsible departments made progress by providing an uncertainty range for most of the individual measures. For the plans as a whole, the uncertainty analysis carried out does not provide a range of GHG reduction estimates.

2009 Spring Report, Chapter 2, K	yoto Protocol Implementation Act	2011 October Report, Chapter 1, Climate Change Plans under the <i>Kyoto Protocol</i> <i>Implementation Act</i>
Recommendations	Response to recommendations (summary)	Follow-up on recommendations
2.34 Environment Canada should clearly indicate how it will measure actual emission reductions for each of the GHG emission reduction measures in the plans	Environment Canada accepts this recommendation. For many of the programs that target a range of behaviours and sectors, such as the ecoACTION programs, emission reductions cannot be measured directly; they can only be estimated. The most practical and cost-effective way to calculate greenhouse gas emission reductions from individual measures is to take program data (e.g., reduction in energy used by households or vehicles, increases in renewable energy) and apply reasonable assumptions and methods to estimate the impact of the program on greenhouse gas emissions. Beginning with the 2010 plan, when the first results are known for the Kyoto period (2008–2012), the Government of Canada will provide the estimated emissions reductions achieved for the measures in the plan where it is possible, clearly indicating the methodology used.	In our 2011 audit, we found that 12 of the 19 measures listed in the 2010 plar were reported to have achieved reductions for 2008. All 12 measures included a discussion of the methodolog used for measuring GHG reductions. However, we found that there was no comprehensive quality assurance or quality control system across measures and the plan as a whole that was based on established standards. We concluded that it was not therefore possible to know the extent to which the reported actual GHG reductions were credible.
2011 October Report, Chapter 1, Climate Change F	lans under the Kyoto Protocol Implementation Act	2012 Spring Report, Chapter 1, Kyoto Protocol Implementation Act, and Chapter 2, Meeting Canada's 2020 Climate Change Commitments
Recommendations	Response to recommendations (summary)	Follow-up on recommendations
1.42 Environment Canada should ensure that future climate change plans for the purposes of the Kyoto Protocol Implementation Act contain all the information required by the Act or clearly state why the plans do not do so.	Agreed. Environment Canada has made significant annual improvements to the plans and produces a comprehensive and detailed document that reflects the government's commitment to comply with the <i>Kyoto Protocol Implementation Act</i> 's information requirements to the furthest extent possible. The Commissioner of the Environment and Sustainable Development has identified specific areas where there is room for further improvement, such as strengthening details on implementation of measures. The Department, with the contribution of responsible departments, will seek to address these issues, beginning with the plan for 2011	The 2011 climate change plan is more explicit as it organizes information for each measure by the requirements unde subsection 5(1) of the Act and it include more of the information required. However, the 2011 plan is still missing several key elements. Refer to Exhibit 1.2 for additional details

2011 October Report, Chapter 1, Climate Change F	Plans under the Kyoto Protocol Implementation Act	2012 Spring Report, Chapter 1, Kyoto Protocol Implementation Act, and Chapter 2, Meeting Canada's 2020 Climate Change Commitments
Recommendations	Response to recommendations (summary)	Follow-up on recommendations
1.43 Environment Canada and departments responsible for implementing measures in the climate change plans should include an explanation in the plans of how measures not implemented will be redressed in terms of greenhouse gas emission reductions.	Agreed. When measures for the previous calendar year have been delayed or not implemented, departments will provide a clear explanation for the change in implementation status.	The measures in the 2011 climate change plan were implemented from the previous year; therefore, there was no need for an explanation regarding redress of lost greenhouse gas emission reductions.
 1.81 Environment Canada should ensure that future climate change plans are supported by an appropriate management accountability and reporting framework that includes clear roles and responsibilities, clear goals and objectives for the plans and for the measures, an evaluation strategy, and ongoing performance measurement that includes transparent financial reporting and quality assurance on greenhouse gas emissions and reductions reported. 	Agreed. The new Federal Sustainable Development Strategy (FSDS) provides a management and reporting instrument that will outline much of the information recommended by the Commissioner of the Environment and Sustainable Development. In linking to the government's expenditure planning and reporting system, it also makes transparent the resources associated with climate change initiatives. Finally, the FSDS uses the Canadian Environmental Sustainability Indicators to measure, monitor, and report on progress. The FSDS will augment core management accountability and reporting instruments operating outside of the Act. These include annual reports on plans and priorities, departmental performance reports, and the evaluation plans of departments consistent with Treasury Board's Policy on Evaluation.	The 2011 climate change plan did not contain any new references to the elements of a management accountability and reporting framework cited in the recommendation, nor did the 2011 plan contain any references to the new Federal Sustainable Development Strategy, which was cited in response to this recommendation.
1.82 Environment Canada should ensure that requirements for the reporting of financial information by departments responsible for implementing and reporting on measures in the climate change plans are clear and consistent. These departments should ensure that this financial information is provided in a timely manner. Environment Canada should ensure that financial information, including all funds allocated and spent, is reported for all measures in the annual climate change plans.	Disagreed. Environment Canada does not accept this recommendation. The Kyoto Protocol Implementation Act does not include any requirement for financial reporting in the annual plans. Further, these instruments of financial reporting will be supplemented by additional reporting to Parliament under the new Federal Sustainable Development Strategy.	The 2011 Climate Change Plan did not report financial information for any of the measures listed in the plan.

2011 October Report, Chapter 1, Climate Change Plans under the Kyoto Protocol Implementation Act

2012 Spring Report, Chapter 1, Kyoto Protocol Implementation Act, and Chapter 2, Meeting Canada's 2020 Climate Change Commitments

Recommendations

Response to recommendations (summary)

Follow-up on recommendations

1.83 Departments responsible for implementing and reporting on measures in the climate change plans—including Natural Resources Canada, Transport Canada, the Department of Finance Canada, and Environment Canada—should develop and implement a quality assurance and quality control system for reporting actual greenhouse gas emission reductions, measured or estimated against a baseline. This should include

- publishing complete and transparent information regarding the analysis underlying each measure and its corresponding baseline, the calculation methods for the reductions, and how the criterion of additionality has been defined and met; and
- documenting the accuracy of the actual greenhouse gas emission reductions by providing an uncertainty range for each measure and for the total of all measures, for each remaining year of the Kyoto Period (2009 to 2012). This information should be published in the next climate change plans.

Agreed. Beginning with the 2011 plan, Environment Canada will work with other departments, wherever possible, to provide greater clarity on the consistency of quality assurance and verification systems by asking that departments preparing greenhouse gas (GHG) estimates clearly describe

- the analysis, including methodology and assumptions, underlying the measures;
- the process that departments used to develop the baseline(s);
- the calculation methods for GHG reductions; and
- how the criterion of additionality has been defined and met.

In addition, departments preparing GHG estimates will be asked to provide a range for the actual GHG reductions associated with each measure.

We have not followed up on this recommendation in the 2012 audit.

CHAPTER 2

Meeting Canada's 2020 Climate Change Commitments

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Meeting Canada's 2020 Climate Change Commitments

Main Points

What we examined

Since 1992, the Government of Canada has made domestic and international commitments to address climate change, including commitments to reduce its greenhouse gas (GHG) emissions.

The Government of Canada has now committed to reduce its economy-wide GHG emissions to 17 percent below 2005 levels by 2020, in alignment with the United States. This target was set internationally in the 2009 Copenhagen Accord and has also been communicated in the 2010 Federal Sustainable Development Strategy.

In this audit we examined whether Environment Canada had established an implementation plan designed to meet the 2020 national GHG emission reduction target.

Audit work for this chapter was substantially completed on 21 February 2012. Further details on the audit objective, scope, and criteria are in **About the Audit** at the end of the chapter.

Why it's important

Climate change has far-reaching impacts on Canada's economy, infrastructure, and natural environment, and on human health. Although the Minister of the Environment announced in December 2011 that Canada would withdraw from the Kyoto Protocol, the Government of Canada remains a Party to the United Nations Framework Convention on Climate Change. As such, the government is committed to achieving its national and international commitments to reduce greenhouse gas emissions to 17 percent below 2005 levels by 2020.

What we found

 Environment Canada has indicated that the Government of Canada will use a sector-by-sector approach to regulate GHG emissions. We found that this approach lacks an overall implementation plan designed to achieve the 2020 target, as well as economic analysis to estimate what the approach will cost the Canadian economy.

- · As of February 2012, two regulations were in place to reduce GHG emissions in the transportation sector. These regulations apply to renewable fuels and to passenger automobiles and light trucks. Regulations for the third-largest GHG-emitting sector—the electricity sector—have been proposed but are not expected to take effect until 2015. Currently, no regulations are in place for the second-largest emitting sector, the oil and gas sector.
- In July 2011, Environment Canada released Canada's Emissions Trends, a document that outlines GHG emission reductions expected by 2020 under various scenarios. This document is an important planning tool and a step toward a transparent accounting for Canada's efforts to reduce GHG emissions. However, the document indicates that in 2020, Canada's GHG emissions will be 7.4 percent above 2005 levels instead of 17 percent below, and it estimates that Canada will need to reduce emissions by 178 million tonnes to meet the 2020 target. Therefore, according to Environment Canada's forecasts, the 2020 target will not be met with existing measures.
- Regulations are complex, and those developed to date have taken as long as five years to be developed and to realize greenhouse gas emission reductions. Existing federal regulations are expected to reduce GHG emissions by 11 to 13 million tonnes in 2020. Given that an additional 178 million tonnes in reductions are needed to meet the 2020 target, it is unlikely that enough time is left to develop and establish GHG regulations that together will contribute sufficient GHG reductions to meet the 2020 target.

The Department has responded. The Department agrees with all of our recommendations. Its detailed responses follow each

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Introduction

- 2.1 Canada's government has recognized that the impacts of climate change are far-reaching, affecting our economy, infrastructure, health, and natural environment. Reports by the Government of Canada indicate that the impacts of our changing climate are already evident in every region of Canada. Impacts of recent extreme weather events highlight the vulnerability of Canadian communities and critical infrastructure to climate change.
- 2.2 Since 1992, the Government of Canada has made domestic and international commitments to address climate change, including committing to reduce its emissions of greenhouse gases (GHG) (Exhibit 2.1). Although the Minister of the Environment announced in December 2011 that Canada would withdraw from the Kyoto Protocol, the Government of Canada remains committed to reducing greenhouse gas emissions as a Party to the United Nations Framework Convention on Climate Change and under the 2009 Copenhagen Accord.

Focus of the audit

- 2.3 In its 2011 climate change plan for the purposes of the Kyoto Protocol Implementation Act, Environment Canada noted that Canada has now committed to reduce its economy-wide GHG emissions to 17 percent below 2005 levels by 2020, in alignment with the United States. This target was set internationally in the 2009 Copenhagen Accord and has also been communicated in Canada's 2010 Federal Sustainable Development Strategy. This audit assessed whether Environment Canada had established a plan designed to meet these domestic and international commitments. While other federal departments and agencies also have responsibilities for implementing specific measures to address climate change, they were not included in the scope of this audit.
- **2.4** More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

The federal government has made domestic and international commitments to address climate change and reduce greenhouse gas emissions

2011

2010

2009

2007

International

Upon return from the Conference of the Parties to the United Nations Framework Convention on Climate Change in December 2011, the Minister of the Environment announces that Canada will formally withdraw from the Kyoto Protocol.

Canada commits to reducing greenhouse gas (GHG) emissions by 17 percent below its 2005 level by 2020 under the Co, emagen Accord. Canada's submission to the United Nations Framework Convention on Climate Change notes that this target is to be aligned with the final economy-wide emissions target of the United States in enacted legislation.

At the G8 summit, the G8 leaders establish a long-term objective to reduce global emissions by 50 percent by 2050. A baseline year was not specified.

The Kyoto Protocol formally enters into force, committing Canada to reducing GHG emissions to an average of 6 percent below its 1990 emission level over the 2008–2012 period.

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Canada signs the Kyoto Protocol.

The Kyoto Protocol is adopted under the United Nations Framework Convention on Climate Change.

At the Earth Summit in Rio de Janeiro, Canada ratifies the United Nations Framework Convention on Climate Change.

Domestic

Environment Canada releases its 2011 climate change plan for the purposes of the *Kyoto Protocol Implementation Act.*

Canada commits to reducing GHG emissions by 17 percent below its 2005 level by 2020 under the new Federal Sustainable Development Strategy.

Environment Canada releases its 2010 climate change plan, as required under the *Kyoto Protocol Implementation Act*, which indicates that Canada's target is to reduce GHG emissions to an average of 6 percent below its 1990 emission level over the 2008–2012 period. The plan also reiterates Canada's target under the Copenhagen Accord.

Environment Canada releases the first climate change plan, as required by the *Kyoto Protocol Implementation Act*, which indicates that Canada's target is to reduce GHG emissions to an average of 6 percent below its 1990 emission level over the 2008–2012 period. The plan reiterates the government's commitment as indicated in "Turning the Corner" and adds a commitment to reduce Canada's total GHG emissions by 60 to 70 percent by 2050. These targets were repeated in the 2008 and 2009 climate change plans.

The Kyoto Protocol Implementation Act is assented to in June 2007

The "Turning the Corner" plan is announced. The government commits to reducing GHG emissions by 20 percent below Canada's 2006 level by 2020.

The federal government releases Project Green—Moving Forward on Climate Change: A Plan for Honouring Our Kyoto Commitment, which commits to reducing GHG emissions by 270 million tonnes per year from 2008 to 2012.

The federal government releases Climate Change—Achieving Our Commitments Together, committing to cut 240 million tonnes of GHG emissions from Canada's projected 2010 level.

The Government of Canada Action Plan 2000 on Climate Change commits to reducing GHG emissions by 65 million tonnes per year from 2008 to 2012.

Observations and Recommendations

- 2.5 Our past audit reports examining the management of climate change in 1998, 2000, 2001, 2005, 2006, and 2011 found, among other things, that the federal government had not created effective governance structures for managing climate change activities designed to meet greenhouse gas (GHG) reduction targets. Our reports identified weaknesses in horizontal governance, accountability, and coordination. In our 2011 chapter on climate change plans under the *Kyoto Protocol Implementation Act*, we recommended that Environment Canada ensure that it support future climate change plans using an appropriate management accountability and reporting framework. We recommended that the framework include
 - clear roles and responsibilities,
 - goals and objectives for the plans,
 - an evaluation strategy, and
 - ongoing performance measurement that includes transparent financial reporting and quality assurance on GHG emissions and reductions reported.

In our view, these types of management tools are needed to achieve climate change commitments, particularly national commitments involving many departments and billions of dollars.

2.6 In this current audit, we examined whether Environment Canada had established an appropriate plan to meet the Government of Canada's commitment to reduce total GHG emissions by 17 percent by 2020, relative to 2005 emission levels.

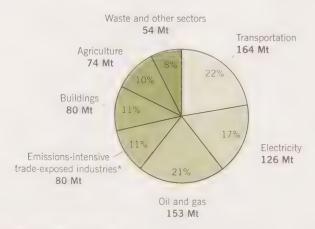
Regulatory approach

The regulatory approach is not supported by an implementation plan designed to meet Canada's 2020 target

- 2.7 There are approximately eight years in which to achieve the Copenhagen Accord 2020 target. We examined whether an implementation plan had been developed to articulate the manner in which greenhouse gas (GHG) emissions would be reduced. Our expectations for what a plan could contain were based on Treasury Board of Canada Secretariat guidance documents and on our review of similar plans developed in the provinces and in other countries. Our review indicated, for example, that plans of this nature often
 - establish performance measurement instruments such as interim targets,

- include mechanisms for coordination among different departments and jurisdictions, and
- use modelling and forecasts to estimate the GHG reductions of the recommended measures and the overall costs in order to compare expenditures with expected results.
- 2.8 To meet its target to reduce GHG emissions to 17 percent below 2005 levels by 2020, the federal government announced that it would use a sector-by-sector regulatory approach. Environment Canada uses the data in Exhibit 2.2 to show 2005 GHG emissions by economic sector and the sectors that will be regulated. The Department has stated that the government would begin regulating the largest GHG-emitting sectors first.
- 2.9 Environment Canada has no overall implementation plan that indicates how different regulations and federal departments and agencies will work together to achieve the reductions required to meet the 2020 target. The Department has not provided an estimate of the emission reductions expected from each sector or a general description of the regulations needed in each of the identified sectors. The regulatory approach does not identify which specific industries within each economic sector the regulations will target and when, or how these regulations will contribute to reducing GHG emissions. Without clarifying these elements of its approach, Environment Canada cannot reasonably determine whether Canada will meet the 2020 target and how much it will cost to do so.

Exhibit 2.2 The Government of Canada is regulating greenhouse gas emissions by sector—2005 emissions in million tonnes (Mt)



^{*} For example, chemicals and fertilizers, iron and steel, and cement. Source: Environment Canada

2.10 An implementation plan would communicate to the regulated companies when and how the regulations will affect them, allowing them to plan and adapt accordingly. Without an implementation plan, industry, consumers, and other levels of government lack a solid basis for knowing how to adjust technology and make formal investment decisions. An implementation plan for the overall approach is important because some sectors, such as the electricity sector and the oil and gas sector, may be affected by more than one of the planned GHG regulations. Furthermore, without such a plan, there is a risk that Canada will fail to meet its commitments to reduce GHG emissions. (See our recommendation in paragraph 2.27.)

Environment Canada does not know how much the regulatory approach will cost the Canadian economy

- 2.11 The government stated that the economic cost of implementing measures to achieve the obligations made under the Kyoto Protocol was prohibitively high. We therefore anticipated that the federal government would have estimated the cost of its regulatory approach and identified the least-cost options. Yet we found that Environment Canada has not conducted a comprehensive analysis to estimate the combined cost of the sector-by-sector approach to regulating GHG emissions. Nor has it estimated the impact on or costs to the Canadian economy of aligning its approach with the United States, or examined whether this is the most cost-effective option. These analyses are important in order to establish whether Canada faces proportionally higher costs than the United States in adopting an aligned regulatory approach.
- **2.12** When a regulation is drafted, an analysis is conducted of the regulation's potential impact, including its economic costs and benefits. However, we found that the combined economic costs of the overall regulatory approach have not been estimated. (See our recommendation in paragraph 2.27.)

Development of regulatory measures may be too slow to realize sufficient reductions by 2020

2.13 The Canadian Environmental Protection Act, 1999 lists greenhouse gases as toxic substances. The GHG regulations that Environment Canada has either proposed or finalized to date are enacted under this statute. The regulations apply performance standards for emissions sources. Performance standards can set a limit on the amount of GHG that may be emitted during a specified period or within a specified distance. For example, the passenger automobile and light truck GHG regulations set progressively more stringent

standards for GHG emissions from new cars and trucks for the 2011 to 2016 model years. The proposed coal-fired electricity regulations set a performance standard with an emissions limit of 375 tonnes of carbon dioxide per gigawatt hour, per plant, which is equivalent to the average emissions intensity level of a high-efficiency natural gas—fired plant. Performance standards can also impose other requirements that will result in GHG emission reductions. For example, the regulations for renewable fuels require a percentage of average annual renewable content based on the volume of fuel produced or imported.

- 2.14 Exhibit 2.3 lists the GHG regulations that are part of the sector-by-sector approach, their current status, and costs and benefits to the Canadian economy as published in the regulatory impact analysis statements in the Canada Gazette, Part I. The exhibit shows that of the sectors planned for regulation, two regulations are in place in the transportation sector and one regulation has been proposed for the electricity sector. Four additional regulations in the transportation sector are in the early development stage, and two others are at the conceptual stage. Development of further regulations in the electricity, oil and gas, and emissions-intensive trade-exposed industries (such as cement, chemicals, and iron and steel) are also at the conceptual stage.
- 2.15 Environment Canada officials told us that recent amendments to the Energy Efficiency Regulations are also considered to contribute to GHG emission reductions in the buildings sector. While these regulations indirectly contribute to the reduction of GHG by decreasing electricity demand, we found that they are not consistently identified in public documents as part of the federal sector-by-sector approach to regulating GHG emissions. We have therefore not included them in our analysis.
- 2.16 The development of federal regulations is a complex process involving mandatory consultation with stakeholders, as well as analysis to determine the impact of the regulations on health and safety, security, the environment, and the social and economic well-being of Canadians. Regulations that place limits on GHG emissions can take up to five years to develop and realize actual GHG emission reductions (Exhibit 2.4). For example, the Renewable Fuels Strategy was announced in December 2006, but renewable fuel regulations for gasoline did not come into effect until December 2010. Furthermore, regulations to include renewable fuel content in diesel fuel and heating oil did not take effect until July 2011. In addition, the proposed regulations for coal-fired electricity plants, which were announced in June 2010, are not expected to come into effect or result in GHG emission reductions until 2015.

Exhibit 2.3 GHG regulations are in place in the transportation sector and proposed for the electricity sector

Sector and percentage of total Canadian emissions (2005)	Regulation or proposed industry to be regulated	Status of regulations	Projected GHG emission reductions in 2020	Projected costs and benefits to government and the economy resulting from regulations*
Transportation (22 percent)	Renewable Fuels Regulations (Canadian Environmental Protection Act, 1999)	Finalized Published in Canada Gazette, Part II, on 1 September 2010, requiring an average renewable fuel content in gasoline of 5 percent, in effect 15 December 2010. In July 2011 an amendment to the regulations was published in Canada Gazette, Part II, requiring an average renewable fuel content of 2 percent in diesel fuel and heating oil, in effect 1 July 2011.	2-3 million tonnes**	Cost of regulations: \$1.9 billion Cost of amendments: \$12.8 billion Benefit of regulations: \$560 million Benefit of amendments: \$10.4 billion
	Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations (Canadian Environmental Protection Act, 1999)	Finalized Final regulations for the 2011 to 2016 model years were published in <i>Canada Gazette</i> , <i>Part II</i> , on 1 October 2010. These regulations are aligned with those of the United States. Published at the same time as the 2011 to 2016 regulations was the notice of intent for more stringent regulations for 2017 and later model years, which are currently being developed in alignment with the US. A consultation paper on the next phase (2017 to 2025) was released on 16 November 2011. Responses were accepted until 16 December 2011.	9-10 million tonnes	Cost: \$4.2 billion Benefit: \$13.4 billion
	Proposed regulations to limit GHG emissions from new onroad heavy-duty vehicles and engines (Canadian Environmental Protection Act, 1999)	In development A consultation paper was released on 9 August 2011. The proposed regulations are targeted for publication in the Canada Gazette, Part I, in 2012. Regulations will take effect with the 2014 model year, becoming more stringent up to 2018, and are being developed in alignment with the US.	Not available	Not available

* The time frame for the analysis of costs and benefits is different for each regulation. For more information, see the Regulatory Impact Analysis Statements published in the Canada Gazette. ** Since the amendments regulate renewable fuel content in heating oil as well as diesel, these regulations also contribute to reducing greenhouse gas emissions in the buildings sector.

GHG regulations are in place in the transportation sector and proposed for the electricity sector (continued)

Sector and percentage of total Canadian emissions (2005)	Regulation or proposed industry to be regulated	Status of regulations	Projected GHG emission reductions in 2020	Projected costs and benefits to government and the economy resulting from regulations*
Transportation (22 percent)	Off-road vehicles	Conceptual stage	Not available	Not available
(continued)	Marine	In development	Not available	Not available
	Vessel Pollution and Dangerous Chemicals Regulations (Canada Shipping Act, 2001)	Transport Canada is the lead department. Regulatory approach was outlined in a consultation paper released in fall 2011 and includes new controls approved by the International Maritime Organization for greenhouse gas emissions from ships. Proposed regulations are targeted for publication in <i>Canada Gazette</i> , <i>Part I</i> , in 2012 and are expected to take effect in 2013.		
	Aviation	In development	Not available	Not available
		Transport Canada is the lead department. A carbon dioxide emissions standard for commercial airplanes is expected to be approved by the International Civil Aviation Organization in 2014 (currently in consultation phase). Once approved, it will be adopted into the Canadian Aviation Regulations (Aeronautics Act, 1985).		
	Rail	Conceptual stage	Not available	Not available
		Transport Canada is the lead department.		
Oil and gas	Upstream and downstream	Conceptual stage	Not available	Not available
	regulated.	Early consultation with industry and provinces to inform the scope and approach. Proposed regulations are expected to be published in <i>Canada Gazette</i> , <i>Part I</i> , in December 2012.		

and year of costs and benefits is different for each regulation. For more information, see the Regulatory Impact Analysis Statements published in the Canada Gazette.

Exhibit 2.3 GHG regulations are in place in the transportation sector and proposed for the electricity sector (continued)

Sector and percentage of total Canadian emissions (2005)	Regulation or proposed industry to be regulated	Status of regulations	Projected GHG emission reductions in 2020	Projected costs and benefits to government and the economy resulting from regulations*
Electricity (17 percent)	Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations (Canadian Environmental Protection Act, 1999)	Proposed Proposed in Canada Gazette, Part I, on 27 August 2011. Scheduled to take effect 1 July 2015. Final regulations expected in June 2012.	6 million tonnes	Cost: \$8.2 billion Benefit: \$9.7 billion
	Natural gas-fired electricity generation	Conceptual stage Proposed regulations expected to be published in Canada Gazette, Part I, in September 2012.	Not available	Not available
Emissions-intensive trade-exposed industries (11 percent)	Individual sectors—for example, chemicals and fertilizers, iron and steel, and cement—will be regulated.	Conceptual stage Aim to publish proposed regulations for one or more sectors in <i>Canada Gazette, Part I</i> , in late 2012.	Not available	Not available

- Ingitive transitive and yes of costs and penefits is different for each regulation. For more information, see the Regulatory Impact Analysis Statements published in the Canada Gazette. Note: Greenhouse gas regulations for the sectors of buildings, agriculture, and waste and others are not currently in place.

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2.17 The proposed coal-fired electricity regulations will affect new plants and existing plants when they reach the age of 45 years, at which point they would have to meet the performance standard or else close. Environment Canada has estimated that these regulations will reduce GHG emissions by about 6 million tonnes in 2020. However, 34 of the 47 coal-fired electricity-generating plants operating in Canada would not be subject to the proposed performance standard until after 2020. In addition, any newly built plant in operation before the proposed regulations take effect on 1 July 2015 would not be

Exhibit 2.4 Greenhouse gas regulations have taken up to five years to develop and will not, on their own, realize sufficient reductions to meet the 2020 target



^{*} Additional emission reductions required to meet the 2020 target are 178 million tonnes according to Canada's Emissions Trends, 2011. Source: Compiled from information from the *Canada Gazette* and Environment Canada.

required to meet them for 45 years. A new plant constructed before this date would contribute significant emissions by 2020 because an average 500-megawatt coal-fired plant emits about 3 million tonnes of GHG per year.

- 2.18 While regulations are in place or have been proposed for the highest and third-highest emitting sectors (transportation and electricity), none are yet in place for the second-highest, the oil and gas sector. This sector was responsible for 21 percent of GHG emissions in 2005, and emissions from oil sands production and upgrading are expected to increase by 62 million tonnes by 2020. Even if regulations for this sector were proposed by late 2012, as planned, a five-year delay is common before regulations come into effect, to provide adequate time for industry to adjust operations to the regulations.
- 2.19 In summary, as of February 2012, the two GHG regulations that were in place—applying to renewable fuels and to automobiles and light trucks—are expected to reduce GHG emissions by 11 to 13 million tonnes in 2020. Regulations for coal-fired electricity plants have been proposed and are expected to take effect in 2015. They are expected to result in 6 million tonnes of emission reductions in 2020. Regulations for the oil and gas sector were still in the conceptual stage. Given that an additional 178 million tonnes in reductions are needed to meet the 2020 target, it is unlikely that enough time is left to develop and establish GHG regulations that together will contribute sufficient GHG reductions. (See our recommendation in paragraph 2.27.)

Environment Canada does not have a clear definition or criteria to guide regulatory alignment with the United States

2.20 Canada's 2010 letter to the United Nations Framework Convention on Climate Change Secretariat, confirming the economywide emissions target for 2020, states that Canada's target and base year are aligned with those of the United States under the Copenhagen Accord. Environment Canada's 2011 climate change plan, for the purpose of the Kyoto Protocol Implementation Act, further indicates that it will align its regulatory approach with the United States, where appropriate and in Canada's best interests. Although the United States has not yet enacted legislation regarding its economy-wide target to reduce emissions to 17 percent below 2005 levels by 2020, the US Clean Air Act provides the federal legal authority to regulate GHG emissions in the United States (Exhibit 2.5).

Exhibit 2.5 The US *Clean Air Act* provides legal authority to regulate greenhouse gas emissions in the United States

- At the federal level in the United States, the Clean Air Act (CAA) is the central mechanism for developing regulations to reduce greenhouse gases (GHG).
- Since 1970, the US Environmental Protection Agency (EPA) has used the CAA to regulate air pollutants, and in 2007 the Supreme Court found that this authority also applied to the regulation of GHG.
- In 2009, the EPA made a science-based determination that GHGs threaten human health and welfare, which compelled the Agency to regulate GHG emissions in order to mitigate harm.
- Under the CAA, the EPA has implemented fuel efficiency standards for light- and heavy-duty vehicles.
- Starting in 2011, the EPA mandated permitting requirements for major new and
 modified industrial sources of GHG emissions. Industrial sectors that are targeted
 include power plants, refineries, iron and steel mills, pulp and paper mills, nitric
 acid plants, cement plants, and boilers. The permits require facilities to implement
 "best available control technologies" for pollution reduction. Permits are issued at
 the state level with EPA oversight and guidance.
- The EPA is also developing technology-based GHG performance standards for power plants and oil refineries.

Source: United States Environmental Protection Agency

- 2.21 While the United States has not specifically stated that it is taking a sector-by-sector approach to regulating GHG emissions, certain sectors are regulated for GHG under its Clean Air Act. We assessed whether Environment Canada had undertaken analysis and consultation to determine under which circumstances alignment with the United States was appropriate or not appropriate. To do this, we focused on the GHG regulations that are in place or are being developed as part of the sector-by-sector approach in Canada.
- 2.22 When developing GHG regulations, Environment Canada analyzes actions taken in the United States to reduce GHG emissions for the source or industry. Exhibit 2.6 shows the GHG regulations developed or under development in both countries by sector. It indicates that while Canada and the United States are both using regulations to reduce GHG emissions, their approaches are often different.

Exhibit 2.6 Canada and the United States are using regulatory approaches to reduce greenhouse gas (GHG) emissions

Canada (Canadian Environmental Protection Act, 1999)	United States
Transp	ortation
Renewable Fuels Regulations	Renewable Fuel Standard (Energy Policy Act)
Mandate an average annual percentage of renewable fuel content in gasoline (effective December 2010), diesel fuel, and heating oil (effective July 2011), based on the volume of fuel produced or imported.	In place since 2005. Mandates renewable fuel volumes in gasoline and diesel based on forecasted production.
Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations Progressively more stringent standards, aligned with the United States, for GHG emissions from new cars and light trucks for the 2011 to 2016 model years, finalized in October 2010.	Light-Duty Vehicle Greenhouse Gas Emission Standards (Clear Air Act) and Corporate Average Fuel Economy Standards (Energy Policy and Conservation Act) Final joint Environmental Protection Agency (EPA) and National Highway Troffic Sofety Administration (NUTSA) rule upon
In November 2011, Environment Canada released a consultation document on the next phase (2017 to 2025) of the regulations, also being developed in alignment with US standards.	Highway Traffic Safety Administration (NHTSA) rule was published in May 2010 for model years 2012 to 2016. In November 2011, EPA and NHTSA issued a joint proposal to extend the harmonized GHG and fuel economy standards to model year 2017 through 2025.
New on-road heavy-duty vehicles and engines GHG regulations Consultation paper released in August 2011. Regulations are expected to take effect with the 2014 model year and become more stringent up to 2018, and will be aligned with the US standards.	Greenhouse Gas Emissions (Clean Air Act) and Fuel Efficiency (Energy Policy and Conservation Act) Standards for Mediumand Heavy-Duty Engines and Vehicles Regulations for 2014 to 2018 model years finalized in August 2011. Developed jointly by the US Environmental Protection Agency and the National Highway Traffic Safety Administration.
Elect	tricity
Reduction of Carbon Dioxide Emissions from Coal-Fired Generation of Electricity Regulations Draft federal regulation released for public comment in August 2011. Performance standard proposed for carbon dioxide emissions from coal-fired plants.	GHG permitting program (Clean Air Act) Federal permitting requirement implemented by states, in effection since January 2011; covers new major stationary sources from all sectors, including all new and modified fossil fuel–fired power plants. A pre-construction permit establishes GHG emission limits for each plant on a case-by-case basis, based on deployment of best available control technology.
Natural gas–fired electricity regulations	Regulated GHG performance standards (Clean Air Act)
Draft federal regulatory approach under development.	The EPA is developing technology-based GHG performance standards (New Source Performance Standards) for new and modified fossil fuel–fired power plants.
	Emission guidelines that states will use to develop plans for reducing emissions from existing sources will also be developed

Canada and the United States are using regulatory approaches to reduce greenhouse gas (GHG) emissions (continued)

Canada (Canadian Environmental Protection Act, 1999)	United States
	Oil and Gas
Federal regulations	GHG permitting program (Clean Air Act)
Regulations in conceptual stage.	Federal permitting requirement implemented by states, in effect since January 2011; covers all major stationary sources from al sectors, including refineries.
	A pre-construction permit establishes GHG emission limit for each plant on a case-by-case basis, based on deployment of best available control technology.
	Regulated GHG performance standards (Clean Air Act)
	The EPA is developing technology-based GHG performance standards (New Source Performance Standards) for new and modified refineries.
	Emission guidelines that states will use to develop plans for reducing emissions from existing sources will also be developed.
Other Emissi	ons-Intensive Industries

Federal regulations

Regulations for emissions-intensive trade-exposed industries (chemicals and fertilizers, iron and steel, cement, aluminum, pulp and paper, potash, lime and gypsum, base metal smelting, and iron ore pelletizing and mining) in conceptual stage.

GHG permitting program (Clean Air Act)

Federal permitting requirement implemented by states, in effect since January 2011; covers large stationary sources from all sectors, including electricity generating units, boilers, pulp and paper, cement, iron and steel, refineries, nitric acid plants, and landfills.

Source: Compiled with information from Environment Canada and US Environmental Protection Agency

- 2.23 Although the government has committed to align with the United States to reduce GHG, we found that there was no document available that defined "alignment" for the purposes of the sector-by-sector regulatory approach. Furthermore, no criteria were established for determining when regulatory alignment with the United States is appropriate and when it is not. This has resulted in varying interpretations of alignment within the Department. The following examples highlight these different interpretations.
- 2.24 Vehicle regulations. Due to the integration of the North American automotive industry, Environment Canada has chosen to harmonize the light-duty and heavy-duty vehicle regulations with equivalent US fuel economy and GHG emission standards. For the passenger automobile and light truck regulations, Environment Canada adopted the same emission standards and test procedures as the United States. Information sharing and monitoring are coordinated under a transportation working group of the Canada–US Air Quality Agreement.

- 2.25 Renewable fuels. Although both countries have chosen to regulate renewable fuel content, the regulated levels and the mechanics of the regulations are different. The US Renewable Fuel Standard mandates renewable fuel volumes based on forecasted production. The standard is reviewed and adjusted each year. The main driver for this policy is energy security. Canada's regulations, under the Renewable Fuels Strategy, are primarily driven by GHG reductions; they mandate renewable fuel percentages rather than volumes (5 percent average annual renewable fuel content in gasoline, and 2 percent in diesel and heating oil). While the regulated levels in Canada are lower than US levels, and compliance credits are assigned at different stages in the life cycle of the fuel, both sets of regulations target the producers and importers of petroleum fuel.
- **2.26** In summary, the Government of Canada, in its commitments to reduce GHG emissions, indicated it would align with the United States in its sector-by-sector approach where appropriate. We found that Environment Canada does not have criteria to determine when this alignment is appropriate and, further, that there is a lack of clarity in how the Department defines alignment.
- **2.27 Recommendation.** Environment Canada should report on the results of the government's plan to achieve the target of reducing greenhouse gas (GHG) emissions to 17 percent below 2005 levels by 2020 through a sector-by-sector approach. The report should identify the measures currently planned, the amount of GHG reductions expected from each measure, the estimated timelines for the implementation of these measures, as well as mechanisms for assessing performance. The report should explain when the measures are aligned with the United States and estimate the overall cost of the approach to the Canadian economy.

The Department's response. The Department agrees with the intent of the recommendation. It will continue to support, within its mandate, the government's sector-by-sector approach to reduce greenhouse gas emissions, aligned with the US approach as appropriate, to achieve Canada's 2020 reduction target. As the government carries on with the implementation of its plan by adopting new measures, the Department will continue to update timelines and projections in public documents while also continuing to ensure that mechanisms for assessing performance are put in place for each measure for which it is responsible. This will be done through the new Federal Sustainable Development Strategy, annual Reports on Plans and Priorities and departmental performance reports, as well as the other reporting mechanisms outlined in our response to the Commissioner's other recommendation.

Consultation and coordination

Mechanisms for federal-provincial-territorial consultation have recently been established

- 2.28 In its July 2011 report, entitled Canada's Emissions Trends, Environment Canada stated that provincial and territorial measures were expected to contribute significantly to the achievement of the Canadawide 2020 target, but did not state by how much. Projections used to forecast the 2020 emissions level include provincial measures such as Ontario's commitment to replace coal-fired electricity generation, the British Columbia carbon tax, and Nova Scotia's cap on electricity sector greenhouse gas (GHG) emissions. Based on its unique circumstances, each province and territory in Canada has adopted its own emission reductions target, its own climate change action plan, or both.
- 2.29 Policy instruments to address climate change across the country include carbon taxes, cap-and-trade schemes, and industry-specific performance standards, among others. In some cases, the same regulated industry, such as the electricity sector or the oil and gas sector, is targeted by more than one level of government and potentially by more than one government policy. Therefore, mechanisms and strategies for consulting, communicating, and coordinating these approaches are important to ensure the most effective and efficient implementation of these policies.
- 2.30 We found that Environment Canada consults with the provinces and territories on each regulation under development as part of its sector-by-sector approach. We also observed that in October 2011, a senior management working group on GHG regulatory development was created to share information with the provinces and territories on the regulatory options being considered, and to seek their feedback. More recently, in December 2011, a consultation steering committee on GHG regulatory development, composed of deputy ministers, was created to discuss provincial and federal regulations. As these two committees are new, we were unable to determine their effectiveness in communicating and coordinating strategies and identifying gaps in the development of GHG regulations.

Cap and trade—A form of market-based regulation that sets an overall limit on emissions and provides flexibility on how the regulated community achieves the required reductions

Targets and forecasts

2.31 As illustrated in Exhibit 2.1, Canada has made a variety of commitments and set a number of targets to reduce greenhouse gas (GHG) emissions since 1992. These targets have become significantly less ambitious over time (Exhibit 2.7). For example, the Kyoto Protocol target aimed to reduce emissions to 6 percent below the 1990 level between 2008 and 2012. Canada's Copenhagen Accord target for 2020 is 3 percent (or 17 million tonnes) above the 1990 level.

Environment Canada has published emissions forecasts

2.32 Canada's Emissions Trends, published in July 2011, incorporates statistics on GHG emissions and energy availability as of December 2010. It provides a transparent accounting of Canada's efforts to reduce GHG emissions—something that corresponds with our recommendations from previous audits. Although we did not audit the model used to generate these statistics and cannot attest to the accuracy of the numbers presented, we acknowledge this as a significant step in providing important information to Canadians and policy makers for decision making. At the time of this audit, Environment Canada officials did not know if they would continue to update and publish this information in the future.

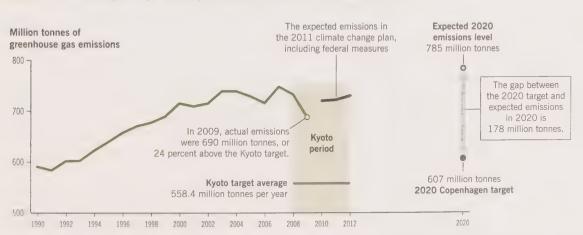


Exhibit 2.7 Reduction targets for greenhouse gas emissions have become less ambitious over time

Source: Compiled with information from Environment Canada's National Inventory Report, 1990–2009: Greenhouse Gas Sources and Sinks in Canada (2011), A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act (May 2011), and Canada's Emissions Trends (July 2011)

Environment Canada's forecasts show that targets will not be met with existing measures

- 2.33 The modelling presented in Environment Canada's Emissions Trends report shows that with existing measures, Canada will be 54 million tonnes (or 7.4 percent) above the 2005 level of GHG emissions in 2020 instead of the targeted 17 percent below it. According to these emissions forecasts, with existing measures, Canada will need to reduce GHG emissions by 178 million tonnes by 2020 to meet its target.
- 2.34 Given that the federal government has set a target and indicated it would be achieved using a sector-by-sector approach, we examined whether an analysis had been conducted to estimate the amount of GHG reductions expected from each sector so that regulations could be best targeted. We found that this information is not available on a sector-by-sector basis and that the only GHG regulations included in the projections are the renewable fuels regulations, the 2011 to 2016 passenger automobile and light truck regulations, and the proposed coal-fired electricity regulations. In other words, while the Government of Canada has a sector-by-sector approach to reducing GHG emissions, there is no sector-by-sector analysis to support it. In our view, these forecasts could be used to better support decision making by modelling scenarios to estimate the amount of GHG reductions that could be achieved from different policies and regulations to optimize their effectiveness. This would assist in setting achievable interim targets, selecting the measures needed to reach them, and measuring performance.
- 2.35 Recommendation. Environment Canada should forecast greenhouse gas (GHG) emissions and reductions under various scenarios to inform decision making. The Department should publish the Canada's Emissions Trends report regularly to support the development of GHG reduction measures toward meeting the 2020 target in any future climate change plans.

The Department's response. Agreed. The Department is committed to transparency in implementing the government's climate change plan. As such, the Department will continue to publish updated Emissions Trends reports. The Department will also continue to publish National Inventory Reports and National Communications under the United Nations Framework Convention on Climate Change (UNFCCC) and will implement any new measurement, reporting, and verification mechanisms established under the Copenhagen Accord, Cancun Agreements, and through the decisions reached at Durban.

Conclusion

- **2.36** Since 1992, the Government of Canada has committed, in various plans and agreements, to address climate change by reducing its national greenhouse gas (GHG) emissions. However, national GHG emissions have risen and were 690 million tonnes in 2009, which is 24 percent above the Kyoto target.
- 2.37 In 2010, the Government of Canada made new international and domestic commitments to reduce GHG emissions to 17 percent below 2005 levels by 2020. Environment Canada has announced a sector-by-sector regulatory approach in alignment with the United States. However, we concluded that the Department has not put in place an appropriate implementation plan to support this approach, which is designed to meet the 2020 target established by these commitments. As of February 2012, only one of the sectors, the transportation sector, was under regulation for GHG emissions. No regulations were in place for the oil and gas sector, the second-largest emitter of GHG. Because regulations are complex, and can take up to five years to develop and result in GHG reductions, it is unlikely that the regulatory approach will contribute emission reductions that are sufficient to meet the 2020 target.
- 2.38 In July 2011, Environment Canada released Canada's Emissions Trends, a report that outlines expected GHG emission reductions up to 2020, under varying scenarios. This document is an important step toward a transparent accounting of Canada's efforts to reduce GHG emissions. However, the forecast shows that in 2020, Canada's GHG emissions will be 7.4 percent above the 2005 level instead of 17 percent below, which indicates that the 2020 target will not be met with existing measures.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of our audit was to determine whether Environment Canada has established an appropriate climate change plan to meet its target to reduce greenhouse gas (GHG) emissions to 17 percent below 2005 levels by 2020, as committed to under the 2009 Copenhagen Accord and in the 2010 Federal Sustainable Development Strategy.

Scope and approach

Environment Canada is the entity under audit for this topic due to its responsibilities under the *Kyoto Protocol Implementation Act*, the United Nations Framework Convention on Climate Change, and the Federal Sustainable Development Strategy. While other federal departments and agencies also have responsibilities for implementing specific measures to address climate change, they were not included in the scope of this audit.

We interviewed key departmental officials in the National Capital Region. We also interviewed other stakeholders and consulted with experts in the field. We interviewed officials from the United States Environmental Protection Agency and reviewed documentation supplied to us by Environment Canada.

Criteria

Criteria	Sources
	neet commitments under the Federal Sustainable Development Strategy d, we used the following criteria:
Environment Canada has an appropriate plan to achieve the new greenhouse gas (GHG) emission reductions target (17 percent of the 2005 emission level by 2020).	October 2011 Report of the Commissioner of the Environment and Sustainable Development, Chapter 1, Recommendation 1.81
	Federal Sustainable Development Strategy, Environment Canada, 2010
	Canada's submission to the United Nations Framework Convention on Climate Change, Copenhagen Accord
	Companion Guide: The Development of Results-based Management and Accountability Frameworks for Horizontal Initiatives, Treasury Board of Canada Secretariat
	Environment Canada's quality assurance/quality control for reporting GHG emissions sources and sinks to the United Nations Framework Convention on Climate Change, National Inventory Report, 2011
	Canada's Emissions Trends, Environment Canada, 2011
Environment Canada can demonstrate where alignment with the United States approach to regulating GHG emissions is	Federal Sustainable Development Strategy, Environment Canada, 2010
appropriate and where it is not, and has planned which sectors of the Canadian economy will be regulated for GHG emissions and when.	Canada's submission to the United Nations Framework Convention on Climate Change, Copenhagen Accord
	 Presentation—"Canada's Climate Change Mitigation Plan," at the United Nations Climate Change Conference, Bonn, Germany, 9 June 2011
	Speech given by the Honourable Peter Kent, Minister of the Environment, "Climate Change Milestones," at the Economic Club of Canada, Toronto, Ontario, 28 January 2011
	A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act, Environment Canada, 2011
Environment Canada knows whether the sector-by-sector regulatory approach is expected to reduce GHG emissions	Canada's submission to the United Nations Framework Convention on Climate Change, Copenhagen Accord
(2005 level) by 17 percent by 2020.	Speech given by the Honourable Peter Kent, Minister of the Environment, "Climate Change Milestones," at the Economic Club of Canada, Toronto, Ontario, 28 January 2011
	 Presentation—"Canada's Climate Change Mitigation Plan," at the United Nations Climate Change Conference, Bonn, Germany, 9 June 2011
	A Climate Change Plan for the Purposes of the Kyoto Protocol Implementation Act, Environment Canada, 2011
	Canada's Emissions Trends, Environment Canada, 2011

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The period covered by this audit was October 2006 to December 2011. Audit work for this chapter was substantially completed on 21 February 2012.

Audit team

Principal: Kimberley Leach Tanya Burger Melissa Miller

For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

Regulatory approach

2.27 Environment Canada should report on the results of the government's plan to achieve the target of reducing greenhouse gas (GHG) emissions to 17 percent below 2005 levels by 2020 through a sector-bysector approach. The report should identify the measures currently planned, the amount of GHG reductions expected from each measure, the estimated timelines for the implementation of these measures, as well as mechanisms for assessing performance. The report should explain when the measures are aligned with the United States and estimate the overall cost of the approach to the Canadian economy. (2.7-2.26)

Response

The Department agrees with the intent of the recommendation. It will continue to support, within its mandate, the government's sector-by-sector approach to reduce greenhouse gas emissions, aligned with the US approach as appropriate, to achieve Canada's 2020 reduction target. As the government carries on with the implementation of its plan by adopting new measures, the Department will continue to update timelines and projections in public documents while also continuing to ensure that mechanisms for assessing performance are put in place for each measure for which it is responsible. This will be done through the new Federal Sustainable Development Strategy, annual Reports on Plans and Priorities and departmental performance reports, as well as the other reporting mechanisms outlined in our response to the Commissioner's other recommendation.

Targets and forecasts

2.35 Environment Canada should forecast greenhouse gas (GHG) emissions and reductions under various scenarios to inform decision making. The Department should publish the Canada's Emissions Trends report regularly to support the development of GHG reduction measures toward meeting the 2020 target in any future climate change plans. (2.31–2.34)

Agreed. The Department is committed to transparency in implementing the government's climate change plan. As such, the Department will continue to publish updated Emissions Trends reports. The Department will also continue to publish National Inventory Reports and National Communications under the United Nations Framework Convention on Climate Change (UNFCCC) and will implement any new measurement, reporting, and verification mechanisms established under the Copenhagen Accord, Cancun Agreements, and through the decisions reached at Durban.



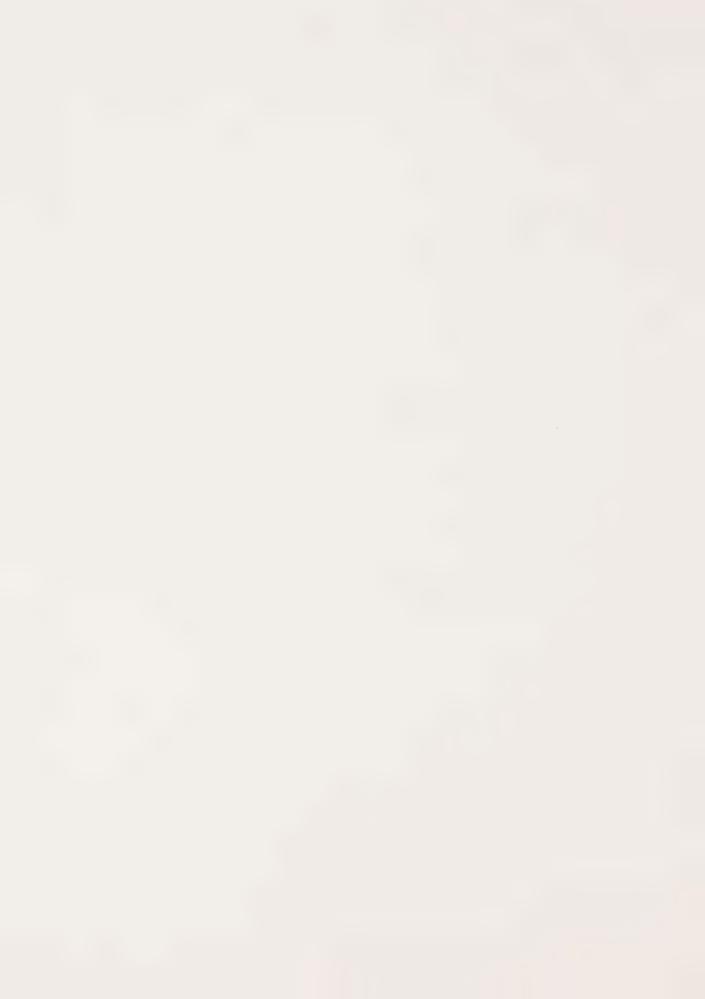
CHAPTER 3

Federal Contaminated Sites and Their Impacts



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Federal Contaminated Sites and Their Impacts

Main Points

What we examined

Causes of environmental contamination vary widely, from ongoing pollution to the long-term legacy of abandoned mines, underground oil tanks, and others. Often environmental impacts and their costs to the public purse can still be felt decades after an activity has ended.

In 1989, the federal government and the provinces recognized the importance of remediating contaminated sites in Canada. The Office of the Auditor General first audited federal activities involving federal contaminated sites in 1995, when only a few thousand sites had been identified. By March 2011, the government had identified around 22,000 sites of suspected or actual contamination in the Federal Contaminated Sites Inventory. The inventory includes contaminated sites under federal custodianship as well as non-federal sites for which the government has accepted responsibility. Federal contaminated sites range in size and type from small areas of soil contaminated by spilled fuel to very large abandoned mine sites that are contaminated by heavy metals and other toxic substances.

We examined how the federal government manages and reports actions taken to address the contaminated sites in its inventory, including the financial impact of environmental damage arising from them. Audit work for this chapter was substantially completed on 6 March 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

Contaminated sites pose numerous risks to human health and the environment. Thousands of federal contaminated sites exist across Canada in both urban and rural settings. Unless managed properly, contaminated sites can lead to significant contamination of water, soil, and air, which can threaten human health and the environment. They can also result in land being taken out of productive use, and can jeopardize the way of life of those who depend on the land for a living.

What we found

- The government has established systems and processes to assess the risks on its individual contaminated sites as well as the current or potential adverse impact of a site on human health and the environment. It also has a process to prioritize sites for action based on the level of concern they pose. However, there is lack of a standard site closure reporting system. At the time of our audit, management was in process of developing a standard site closure tool for sites funded under the Federal Contaminated Sites Action Plan (FCSAP).
- Action on federal contaminated sites has increased over the past six years under the FCSAP program. Progress has been made with about one third of the total federal inventory of contaminated sites recorded as closed and not requiring further action as of March 2011. However, many sites remain to be remediated, and federal custodians had not begun assessments of about one half of the active sites in the federal inventory as of March 2011. As a consequence, the full extent of risks that federal contaminated sites present to the environment and human health remains unknown as well as the financial exposure of these sites.
- The government lacked a consolidated plan with clear and measurable expectations for all contaminated sites that identifies what departments with custodial responsibilities for contaminated sites need to accomplish and by when. A performance measurement strategy for the FCSAP program was approved in January 2012 to be implemented over the next few years.
- As of March 2011, the estimated financial liability for dealing
 with federal contaminated sites exceeded the amount of dedicated
 funding remaining under the FCSAP program by about \$500 million.
 As a result, there is risk that contaminated sites will not be
 sufficiently addressed.
- Public transparency can be improved by disclosing what has been accomplished for costs incurred. While about \$1.5 billion has been spent addressing federal contaminated sites, a performance measurement and reporting system does not exist to allow Parliament to determine the value for money of the government's approach to managing all federal contaminated sites.

The departments have responded. The departments agree with our recommendations. Their detailed responses follow each recommendation throughout the chapter.

Introduction

Federal contaminated sites

- 3.1 Contaminated sites contain substances that pose, or are likely to pose, a hazard to human health or the environment. More specifically, a contaminated site is one at which substances occur at concentrations above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or exceed the levels specified in policies and regulations. Such sites are found all across Canada, with some in urban settings and others in remote areas.
- 3.2 Contaminated sites are a long-standing concern that this Office first reported on in 1995. At that time, the government had identified a few thousand such sites. As of March 2011, about 22,000 actual, suspected, or closed contaminated sites were listed in a federal inventory. Contamination at these sites can affect the integrity of soil, water, and air; may jeopardize the health of people who live or work near these sites; and may harm natural flora and fauna. Contaminants include toxic and hazardous substances, such as petroleum products, heavy metals, and radioactive materials.
- **3.3** Beyond the environmental risks associated with these sites, the financial implications they represent to the federal government are significant. Since 2005, the federal government has spent about \$1.5 billion to address the problem.
- 3.4 The contaminated sites referred to in this audit are sites that became contaminated due to operations of the federal government, and tenants on federal lands. In thousands of cases, environmental damage took place decades before the government introduced tighter regulations on pollution and toxic substances. Contamination has resulted from a range of activities, including dumping of hazardous waste, spills, leaks from fuel tanks, and improper decommissioning of industrial sites.
- 3.5 The federal government is one of the largest landowners in Canada. Its portfolio includes land and natural resources in northern regions of the country along with pockets of land scattered across the country, such as military bases and training areas, airports, ports and harbours, laboratories, and other areas used for federal operations. The federal government also takes responsibility for contaminated sites on Aboriginal reserves.

3.6 In some cases, the government inherited contaminated sites from other parties. That is the case in the northern territories, where private mining companies extracted gold and other metals under federal permits. When these mines were abandoned or the owner went bankrupt, the sites, including the liability for remediating them, reverted to the federal government as the landowner.

Responsibilities for managing contaminated sites

3.7 Over 20 federal entities are involved in managing contaminated sites across Canada (Exhibit 3.1).

Exhibit 3.1 Key responsibilities for managing federal contaminated sites

Organization	Responsibilities
Treasury Board of Canada	Approves policy for the management of real property and approves allocation of approved funding.
Treasury Board of Canada Secretariat	 Develops and monitors implementation of policy. Maintains the Federal Contaminated Sites Inventory. Supports Environment Canada in administering the Federal Contaminated Sites Action Plan (FCSAP) program.
Environment Canada (FCSAP Secretariat)	Administers and coordinates the FCSAP program across the federal government.
Custodian departments, agencies, and Crown corporations (custodians)	 Administer property and buildings on federal lands Identify, assess, manage, and remediate contaminated sites. Input and maintain data in the Federal Contaminated Sites Inventory.
Expert support departments: Environment Canada, Fisheries and Oceans Canada, Public Works and Government Services Canada, Health Canada	Provide scientific and technical assistance to custodians.

Risk manage—Select and implement a strategy to control risk, then monitor and evaluate the effectiveness of that strategy. Risk management may include direct remedial actions or other strategies that reduce the probability, intensity, frequency, or duration of the exposure to contamination. This includes warnings, access restriction, or change in land use.

Remediate—Improve a contaminated site to prevent, minimize, or mitigate damage to human health or the environment. Remediation involves developing and applying a planned approach that removes, destroys, contains, or otherwise reduces the impact of contaminants.

Source: Contaminated Sites Management Working Group

Enterprise Crown corporation—A government-owned entity that is mostly self-sustaining through commercial revenues.

- **3.8** Departments receive direction through the Treasury Board policy on the management of real property. Under this policy, departments are required to
 - assess, classify, and risk manage known and suspected contaminated sites to determine the most appropriate and costeffective course of action;
 - prioritize sites posing the highest human health and ecological risks;
 - manage the activities (including remediation) needed for current or intended federal use, guided by standards approved by the Canadian Council of Ministers of the Environment; and
 - recover the cost of managing contamination caused by others, when economically feasible.
- 3.9 The Treasury Board of Canada Secretariat maintains a database called the Federal Contaminated Sites Inventory. Custodians put data into this inventory, which serves as a record of basic information on sites for which the Government of Canada has accepted responsibility. The inventory includes such information as location of the site, contaminants, quantity of contamination, proximity to human population, and current status of each site. The inventory does not include contaminated sites owned by enterprise Crown corporations, other levels of government, or the private sector.
- 3.10 For many sites, the entire process from identification to remediation can be done in a relatively short time. However, Environment Canada estimates that about 13 percent of the sites will take 10 or more years to complete the process. This is often the case for larger sites, such as abandoned mines in the northern territories. Some sites might need care and maintenance or monitoring for a few years, for decades, or into perpetuity. Addressing contaminated sites is often a complex task, involving long timelines and major expenditures now and into the future.
- 3.11 The Federal Contaminated Sites Action Plan program. In 2005, the federal government created the Federal Contaminated Sites Action Plan (FCSAP) program. This \$3.5 billion, 15-year cost-sharing program, which Environment Canada administers, assists custodians with the costs of assessing and taking action for higher-risk sites. The program has two key goals: to reduce the risks to human health and the environment from these sites and to reduce the financial liability for known federal contaminated sites by 2020. The program is divided into three phases: Phase I ended in March 2011, Phase II ends in 2016, and Phase III ends in 2020.

3.12 The FCSAP program financially supports projects in all regions of the country (Exhibit 3.2) that meet certain administrative criteria and technical requirements. Only sites where contamination occurred before 1998 are included. About 8,200 sites received funding under the program. This is just over one third of the total number of sites listed in the federal inventory as at March 2011.



Exhibit 3.2 Sites funded through the Federal Contaminated Sites Action Plan (FCSAP) are found across the country

Source: Treasury Board of Canada Secretariat, Federal Contaminated Sites Inventory

Public Accounts and environmental liabilities

3.13 As reported in the Public Accounts of Canada, the financial liability to remediate or otherwise risk manage about 2,200 contaminated sites was estimated at \$4.3 billion as of 31 March 2011. This estimate is based on Canadian public sector accounting standards and criteria for recognizing a financial liability. An environmental liability for a site is established when

contamination occurs, when there is a federal obligation or likely obligation to incur remediation costs, and when a reasonable estimate can be made of the amount involved. The Public Accounts are not intended to report all possible future costs or environmental risks associated with federal contaminated sites, unless accounting criteria are met. Exhibit 3.3 shows the composition of recorded environmental financial liabilities.

- **3.14** In addition to the FCSAP program, there are three other major initiatives that address contaminated sites or facilities for which the federal government has accepted some or all financial responsibility.
 - Port Hope Area Initiative. This initiative was approved in 2000 to address historic low-level radioactive waste sites in the Port Hope, Ontario area. The current estimated financial liability for this initiative is \$1.1 billion. These sites are included in the Federal Contaminated Sites Inventory but are not funded by the FCSAP program. They are funded through Natural Resources Canada.
 - Nuclear Legacy Liabilities Program. This program was approved in 2006 to address the decommissioning of research facilities, contaminated lands, and radioactive waste of Atomic Energy Canada Limited. The current estimated financial liability of the program is about \$3.3 billion. These facilities are not included in the Federal Contaminated Sites Inventory and are not funded by the FCSAP program. They are funded through Natural Resources Canada.
 - Shared-Responsibility Contaminated Sites. These sites are those where the federal government has agreed to share responsibility for the costs to remediate them. They include the Sydney Tar Ponds in Nova Scotia, the Marwell Tar Pit in the Yukon, and the Gunnar uranium mine in Saskatchewan. These sites are not included in the Federal Contaminated Sites Inventory and are not funded by the FCSAP program. Federal contributions are funded through a separate pool of funds of up to \$500 million, approved in 2004.
- **3.15** Exhibit 3.3 shows the administrative structure and financial makeup of contaminated sites.

Exhibit 3.3 Programs and initiatives reported sizeable environmental liabilities

Public Accounts—environmental liabilities as at 31 March 2011	In billions of dollars
Contaminated sites	
Sites within the Federal Contaminated Sites Inventory	
Sites in the Federal Contaminated Sites Action Plan (FCSAP) program	\$2.4
Port Hope Area Initiative	\$1.1
Site liabilities not covered by the FCSAP program	\$0.5
Sites of Crown corporations and a shared site	\$0.3
	\$4.3
Asset restoration	
Nuclear Legacy Liabilities Program	\$3.3
Others	\$0.1
	\$3.4
Total environmental liabilities reported	\$7.7

Source: Public Accounts and Federal Contaminated Sites Inventory

Previous audit work

3.16 Our 2002 October Report of the Commissioner of the Environment and Sustainable Development, Chapter 2, The Legacy of Federal Contaminated Sites, reported on our audit of the management of contaminated sites. In that audit we found that the federal government did not know how many sites it had, the health and environmental risks these sites represented, or the likely cost of cleaning them up. Also, the government was not providing central leadership and an action plan for dealing with higher-risk sites. The audit made several recommendations to address these issues, which were accepted.

3.17 We conducted a follow-up audit in 2008. In our Status Report of the Commissioner of the Environment and Sustainable Development, Chapter 3, Chemicals Management—Federal Contaminated Sites, we reported that four departments we examined were putting significant effort into managing their contaminated sites. We also noted that the government had allocated \$1.5 billion over five years to deal with its sites. The government had also established the FCSAP program. We concluded that satisfactory progress had been made since 2002.

Focus of the audit

- 3.18 We examined whether selected federal entities have appropriate systems in place to manage and report the financial impact of environmental damage arising from federal contaminated sites. We examined the data in the Federal Contaminated Sites Inventory and reviewed information provided to Parliament regarding federal contaminated sites.
- **3.19** The audit focused on the Federal Contaminated Sites Inventory, including those sites funded by the Federal Contaminated Sites Action Plan program, and on administrative activities within selected custodian departments. The scope of our audit included
 - Environment Canada,
 - Treasury Board of Canada Secretariat,
 - Aboriginal Affairs and Northern Development Canada,
 - Fisheries and Oceans Canada, and
 - · Natural Resources Canada.
- **3.20** More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Environmental risks

A process has been established for assessing risks and prioritizing actions

- **3.21** As part of our audit, we examined whether the government had put in place processes to assess the risks of contaminated sites to human health and the environment.
- **3.22** The Treasury Board's Framework for the Management of Risk requires departments to establish effective and transparent risk management practices to help achieve organizational objectives.
- 3.23 Effective risk management practices are key to identifying the nature and extent of risk that contaminated sites pose to human health and the environment. Determining risk is an important step in deciding what remediation or risk management actions may be needed, how extensive they should be, and how much they will cost.
- **3.24** We found that custodians use a scoring system developed by the Canadian Council of Ministers of the Environment. This Council is made up of environment ministers from the federal, provincial, and

territorial governments. The scoring system is designed to evaluate and classify contaminated sites so they can be prioritized for action based on the level of concern they pose (Exhibit 3.4).

Exhibit 3.4 Contaminated sites are classified based on their level of risk

Class 1: Site is rated as high risk with a high priority for action.

Class 2: Site is rated as medium risk with a medium priority for action.

Class 3: Site is rated as low risk. Based on available information, the site is currently not a high concern. Additional investigation may be required to confirm the site classification.

Class N: Site is not a priority for action.

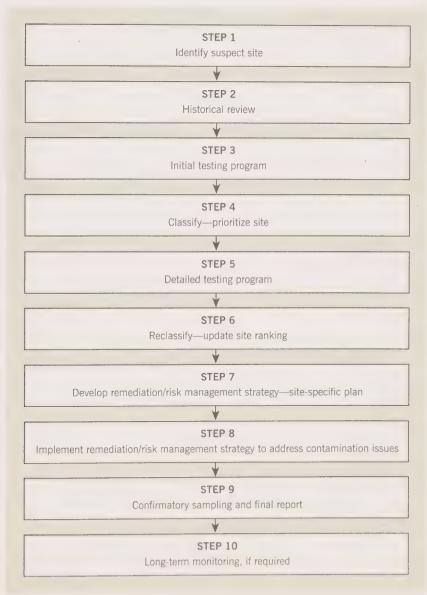
Class INS: Insufficient information to classify a site.

Source: Canadian Council of Ministers of the Environment

- 3.25 Also, the government has a comprehensive 10-step process for addressing contaminated sites (Exhibit 3.5). Custodians are to identify a suspected contaminated site and conduct historical reviews and assessments to find out what kinds of contaminants might be present and the potential risks they may pose. This information is to be used to determine if a suspected site is contaminated, to evaluate and rank sites, and to decide what action should be taken to address the sites. If necessary, a remediation plan or a risk management strategy is developed and implemented.
- **3.26** Remediating a site could involve improving the site to prevent, minimize, or mitigate damage by removing, destroying, containing, or otherwise reducing potential exposure to contaminants. It can involve, for example, pumping and treating contaminated groundwater or surface water, excavating soil, as well as containing the damage by covering or encapsulating contaminated areas.
- **3.27** In summary, we found that federal entities have mechanisms in place for assessing the risks associated with contaminated sites and establishing priorities.
- 3.28 However, a standard tool was not in place for custodians to use when closing a site supported by the Federal Contaminated Sites Action Plan (FCSAP) program. We note that as we were completing our audit, the FCSAP Secretariat of Environment Canada was developing this much-needed tool. The aim of this tool is to validate how appropriate the risk assessment processes and custodian's decisions are and to ensure

that FCSAP-funded sites have met their remediation objectives. The tool will include a consistent set of criteria that must be met in order to close a site. When this tool is in place, it should strengthen the management of federal contaminated sites by providing a complete and consistent method for closing sites.

Exhibit 3.5 Addressing a contaminated site involves up to 10 steps



Note: The steps listed show the complete process for dealing with contaminated sites. In some cases, not all steps will be needed.

Source: Adapted from A Federal Approach to Contaminated Sites, Government of Canada, 1999

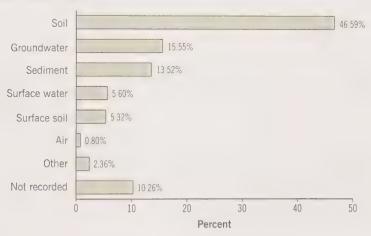
Contaminated sites can have a significant impact on human health and the environment

- 3.29 Part of our audit examined the steps custodians were taking to assess the risks that contaminated sites pose to the health of Canadians and to the environment. Unless they are managed properly, contaminated sites can have a negative impact on the surrounding water, soil, and air, and can threaten human health and the environment. These sites can also have economic impacts if land must be taken out of productive use or if contamination limits or prevents land development.
- 3.30 The guidance under the government's 10-step process for addressing contaminated sites directs custodians to identify suspected sites, to determine what type of and how much contamination is present, and to decide on the actions needed to remediate the site. Custodial departments must start the process by reviewing historical literature or documentation for a suspected site, conducting interviews, and visiting the site. On-site assessments, such as field studies and the sampling of soil and groundwater or surface water, would follow.
- 3.31 Our audit reviewed the FCSAP program and the processes that custodial departments used to manage contaminated sites. We did not visit sites, conduct independent site assessments, or validate whether individual sites in the federal inventory had been properly remediated and closed.
- 3.32 Site investigations show that most confirmed sites have soil contamination, which is the result of fuelling activities, spilling, leaking from above ground storage tanks, or dumping of contaminants on the ground. The quality of groundwater and surface water is also often affected. Contaminants can be mobile. They can penetrate soil and migrate into on-site or off-site drinking water sources or be released from bottom sediments in lakes, rivers, and coastal areas. Fumes or dust can emanate from these sites, affecting outdoor and indoor air quality. Many parts of the environment can be affected by a single source at a site. Exhibit 3.6 presents various types of contaminated media.
- 3.33 Because contaminants are generally toxic, even small amounts can be a cause for concern. Exhibit 3.7 sets out the types of contaminants that custodial departments have identified. Contaminants include substances such as trichloroethylene (TCE) or polychlorinated biphenyls (PCBs), which are listed as toxic substances under the Canadian Environmental Protection Act, 1999. Many sites are

contaminated with metals such as lead and arsenic, or by diesel fuel and other petroleum-based products due to spills and leaks during refuelling or because of faulty underground and above ground fuel storage tanks and systems. Radioactive substances are contaminants identified at some sites.

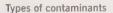
Exhibit 3.6 Soil and water are most affected by contamination

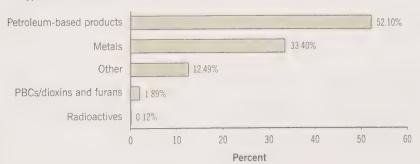
Type of contaminated media



Source: Federal Contaminated Sites Inventory

Exhibit 3.7 Petroleum-based products are the most common type of contaminant





Source: Federal Contaminated Sites Inventory

- 3.34 Exhibit 3.8 sums up two cases that show how even relatively small high-priority sites can have a significant impact on the environment and human health. Some sites can have a profound effect on local communities and their quality of life.
- 3.35 The sites described in Exhibit 3.8 are high-priority sites. By definition, high-priority sites are much more likely to have a greater impact on human health and the environment than medium- or low-priority sites. So far, relatively few active sites (about 5 percent) are classified as high priority.

Exhibit 3.8 Contaminated sites can pose real risks to human health and the natural environment—examples

Contaminated site

Risks to human health and the natural environment



Photo: Aboriginal Affairs and Northern

Property name and location: Attawapiskat Soil Remediation Project, Ontario

Classification and last step completed: Class 1—high priority for action; completed step 7, remediation strategy.

Custodian: Aboriginal Affairs and Northern Development Canada (AANDC)

History: The Attawapiskat Soil Remediation project includes the J.R. Nakogee Elementary School, the site of a former water treatment plant and underground fuel supply lines. The site was contaminated in 1979 when 24,450 litres of diesel fuel seeped into the soil and groundwater around the school. In 2000, the school was closed due to health concerns. The students were relocated to large portables, which they are still using today. The school was demolished in 2009.

Contaminants: Diesel fuel contains toxins such as benzene, toluene, xylene, and other chemicals. Health and safety concerns related to diesel fuel are immediate and long term, including headaches, nausea, and possibly cancer.

Closure objectives: Since 1997, \$3.6 million has been spent on remediation of the school site. A further \$10.1 million has been approved under AANDC's Federal Contaminated Sites Action Plan (FCSAP) program budget to address the contamination by 2014–15. In 2011, AANDC announced that a new school was to be built on a new site by 2014.



Photo: Fisheries and Oceans Canada, Pacific Region

Property name and location: Victoria Coast Guard Base, Victoria, British Columbia. This location has four contaminated sites.

Classification and last step completed: Class 1—high priority for action; completed step 7, remediation strategy.

Custodian: Fisheries and Oceans Canada

History: The base covers a 7.26-hectare parcel of land on Shoal Point in Victoria, British Columbia. The site is the Regional Operations Centre for the Canadian Coast Guard's Pacific Region. There are nine buildings on the property, some dating back to the 1970s. The site was previously occupied by various industrial operations. Site assessments identified contamination of about 91,000 cubic metres in soil, sediment, groundwater, and surface water in four areas. The contamination is being addressed by a combination of remediation and risk management measures. About 800 cubic metres is planned for remediation; the rest is to be risk managed.

Contaminants: Petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs), and metals.

Closure objectives: About \$360,000 has been spent since 2005–06. There will be ongoing risk management, assuming no change in operations.

The full extent of risk to human health and the environment remains unknown

- **3.36** Custodial departments are responsible for assessing potential contaminated sites to identify the extent of the risks they pose to human health and the environment. By analyzing data from the Federal Contaminated Sites Inventory, we examined the extent to which custodians had fulfilled this responsibility.
- 3.37 Since the FCSAP program was introduced, we noted that the number of suspected and contaminated sites that custodians have identified has grown from about 8,500 sites in 2005 to about 22,000 sites—of which about 14,500 sites were active (not closed) as of March 2011. Identification is important to pinpoint specific sites, to compile a complete list, and to determine the extent of risk to human health and the environment.
- 3.38 Our audit analyzed the status and activity of sites listed in the federal inventory as they go through the 10-step process (Exhibit 3.9). Custodians have made progress, thanks to funding from the FCSAP program. However, our analysis shows that as of March 2011, much work remains to be done on active sites if the government is to know the full extent of risks and is to put in place management plans to address the environmental and human health risks linked to contaminated sites:
 - About 48 percent of the active sites (6,968) were at step 1 or step 2 of the process: contamination was suspected; a review of historical and current information and a site visit would be expected, but custodians would not have done any physical testing of soil or groundwater yet.
 - About 10 percent of active sites were at step 3 of the assessment process: initial field investigations and sampling of soil and groundwater would have been done so custodians could assess what contaminants were present, in what quantities, how they were moving, and who or what could be affected by exposure to them (people, animals, or plants). At this stage, risks have not been fully evaluated, nor has a site necessarily been ranked and classified according to risk.
 - Almost 81 percent of active sites have not completed step 6, the point at which risk assessments and site classifications are updated and finalized based on the results of more detailed testing and investigations.
- 3.39 Not all contaminated sites will need to go through the entire 10-step process. For example, if a suspected site is found not to be contaminated, it would be closed in the early steps of the 10-step

process, as it would not require further action. The Treasury Board of Canada Secretariat told us that in the earlier years of the FCSAP program, about one in two assessments (53 percent) resulted in a site being found to be contaminated. More recently, about one in five assessments (19 percent) resulted in such a finding. This shift indicates that custodians were finding that fewer suspected sites were contaminated. The Secretariat also informed us that 45 percent of the sites in the inventory were closed during early steps of the process.

3.40 In our view, given the number of sites that remain to be assessed, the government cannot know the full extent of potential risks to human health and the environment that federal contaminated sites pose.

Exhibit 3.9 Most federal contaminated sites were in the early steps of the 10-step process during the 2010-11 fiscal year

Steps completed	Total sites at this step	Percentage of active sites
Steps 1 and 2—The site is identified as a suspected site. In step 2, do a historical review to identify past activities on the site and potential risks of contamination.	6,968	47.9%*
Step 3—Conduct initial testing program. This step involves site visits and some physical assessments of the site and its surroundings, including soil and water testing.	1,493	10.3%*
Step 4—Based on the conclusions of the initial assessments, classify the sites as high, medium, or low priority for action.	2,382	16.4%*
A preliminary estimate of costs to address the site could be developed at this point.		
Step 5—Conduct detailed testing program.	900	6.2%*
Step 6—Update site classification.	722	5.0%
Step 7—Develop a remediation and/or risk management strategy.	853	5.9%
An updated estimate of costs to implement the strategy can be developed at this point.		
Step 8—Implement the remediation and/or risk management strategy.	571	3.9%
Step 9—Conduct confirmatory sampling and prepare final report.	558	3.8%
Step 10—Provide long-term monitoring, if required.	91	0.6%
Total open active sites as of March 2011	14,538	100%
Sites with activity in 2010–11, closed during 2010–11	2,372	F 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Sites with no activity in 2010–11, closed in previous years	5,027	
Total sites closed	7,399	
Total sites in the inventory	21,937	

Source: Steps from the Federal Approach to Contaminated Sites. Data from the Federal Contaminated Sites Inventory.

- 3.41 The Federal Contaminated Sites Inventory is a live database that can change at any time. The data and analysis presented in Exhibit 3.9 represent sites that were active during the 2010–11 fiscal year and that remained open as of March 2011. In total, about 7,400 sites were recorded as closed—about one third of the total federal inventory of about 22,000 sites.
- 3.42 A site can be recorded as closed at any of the 10 steps. Closed sites are sites that have been identified as "no further action required"; "closed" does not necessarily mean a site has been remediated. A site can be recorded as closed for several reasons, including that it is not seen to need any further consideration, assessment, or remediation. A closed site can be reopened if more information becomes available. The pace of site closures has been accelerating over recent years.
- 3.43 We found that the majority (60 percent) of about 2,370 sites that were active during the 2010–11 fiscal year and then closed at some point during that year were closed at one of the first two steps of the 10-step process. Very few sites (7 percent) were closed at final remediation steps during 2010–11. About 68 percent of the 2,370 sites closed had no priority classification. This means that custodians assessed them as not needing further action or that no federal liability remains on the site. It does not necessarily mean the site has no contamination.
- **3.44** The Federal Contaminated Sites Inventory does not clearly indicate why a site has been closed—for example, whether a site has been sufficiently remediated or has been closed because the criteria for contamination were not met or the property had been disposed of. Therefore, transparency is limited concerning how many sites have been satisfactorily remediated or closed for other reasons.

Financial implications

The Federal Contaminated Sites Action Plan program has accelerated activities to address contaminated sites

- **3.45** As part of our audit, we looked at the effect the introduction of the Federal Contaminated Sites Action Plan (FCSAP) program has had on addressing and remediating contaminated sites.
- **3.46** As noted, the federal government introduced the FCSAP program in 2005 to provide funding and support federal departments, agencies, and consolidated Crown corporations (collectively called custodians) in managing contaminated sites.
- 3.47 Addressing contaminated sites is a complex, time-consuming, and expensive process. In some cases, all 10 steps may be completed within a few years, while on complex sites, assessment to determine the

nature and extent of the problem can take decades. The need for monitoring or for long-term care and maintenance may vary greatly, from a few years to perpetuity.

- Since the FCSAP program was introduced in 2005, the federal government has spent about \$1.5 billion on assessing or remediating nearly 10,600 federal contaminated sites, or about half of the sites in the inventory. Under the cost-sharing arrangements of the FCSAP program, it funded about \$1.3 billion or about 90 percent of the spending, including \$245 million from Canada's Economic Action Plan during the 2009-10 and 2010-11 fiscal years. Custodians funded the remaining amount.
- 3.49 Much has been accomplished since 2005. Spending under Phase I of the FCSAP program (the first 6 years of a 15-year program), which ended in March 2011, was for assessment and remediation, as well as to determine whether projects were eligible for the program and to provide expert support for reviewing site classifications and proposed remediation strategies. Spending enabled about 6,100 site assessments to be completed. Environment Canada also said that since 2005, about 650 high- and medium-priority sites have been remediated using FCSAP funds. The number of remediated sites is only a fraction of all inventoried sites.
- These government funds have allowed custodians to move forward with their assessment and remediation of contaminated sites and to solidify their action plans to address sites that need remediation or risk management. Custodians have also been able to refine the cost estimates for carrying out action plans.
- 3.51 While progress has been made in addressing federal contaminated sites, environmental and human health risks remain. given the number of contaminated sites still to be addressed. These include 827 high-priority and 2,437 medium-priority active sites. Of the 827 active sites assessed as high priority, 52 percent were recorded as having reached at least step 7 of the 10-step process—the point at which a site-specific action plan is to be established. Of the sites assessed as medium priority, about 30 percent had reached the point of having a site-specific action plan. This means a large portion of highpriority sites (48 percent) and medium-priority sites (70 percent) remained to be fully assessed as of March 2011.
- Moreover, about 7,800 or 54 percent of active federal contaminated sites have yet to be given a priority classification as needing or not needing action due to environmental and human

80

health risks. About a further 600 sites have not been assigned a priority due to insufficient information.

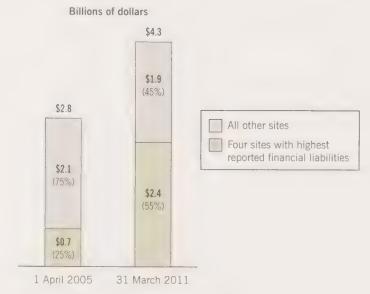
3.53 In summary, while the FCSAP program accelerated assessments, and some 7,400 sites are recorded as closed as of March 2011, a large number of sites had yet to be fully assessed or assigned a priority classification.

The full extent of the government's financial exposure is not known

- 3.54 As part of our audit, we reviewed the progress the government has made in estimating the costs of addressing contaminated sites. Such estimates are a key part of the government's 10-step process.
- **3.55** Cost estimates are essential for setting strategies, goals, targets, and budgets and for understanding the financial impacts of remediating sites in the federal inventory. Understanding the cost helps the government make decisions about reducing environmental risks and addressing contaminated sites in a cost-effective way. Site assessments are important for this purpose.
- **3.56** We analyzed the Federal Contaminated Sites Inventory to determine the progress the government has made in assessing the sites and identifying costs. Specifically, we looked at where each contaminated site was in the 10-step process and whether the costs for addressing the sites were recorded in the federal inventory.
- 3.57 We found that the government does not know the full extent of its financial exposure at this time. The first step in understanding the cost of remediation is to know how much environmental risk there is. However, as Exhibit 3.9 shows, 58 percent of active sites are only at the initial stages of the assessment process. As a result, custodians may not have even a preliminary cost estimate. Our analysis found that about 11,800 sites—81 percent of active sites, including 313 high-priority and 1,185 medium-priority sites—do not yet have any cost estimate recorded in the federal inventory.
- **3.58** We also noted that only 14 percent of active sites are at step 7 or higher, a point where custodians are expected to have a reasonable estimate of costs for carrying out a remediation plan.
- 3.59 Because so many sites are still at the early steps of the process, the government does not have the information it needs to know the cost and the resulting financial liability for federal contaminated sites. The total cost to the government will likely increase over time as more sites are assessed and as action plans, along with cost estimates, are developed and refined.

- 3.60 The pace at which sites will be assessed in the future will depend in part on how much assessment funding custodians receive. The Treasury Board of Canada Secretariat informed us that assessment funding under the FCSAP program will be reduced by 68 percent so more money can be used to remediate known high-priority sites. Unless custodians find additional funds or prioritize sites for assessment, this reduction may slow the pace for determining whether sites are contaminated and for estimating costs for remediation.
- 3.61 Costs for implementing a final remediation or risk management plan may be lower or higher than the original cost estimates that were developed in the earlier assessment stages. In the case of larger, complex sites, we noted that final costs can be much higher than original estimates. As shown in Exhibit 3.10, the estimated amount of financial liability remaining for costs on four large sites grew from an estimated \$732 million in 2005 to \$2.4 billion by March 2011—an increase of about \$1.6 billion over six years.
- 3.62 Exhibit 3.10 reveals a clear trend: the estimated financial liability for large, complex sites can rise substantially as a remediation strategy is developed and implemented. Of about 2,200 sites recording a financial liability, 9 percent had an average liability of about

Exhibit 3.10 Estimated financial liabilities for four large, complex sites grew substantially between the 2005–06 and 2010–11 fiscal years



Source: Data from Federal Contaminated Sites Inventory

- \$5 million each, and 90 percent had an average reported liability of less than \$1 million each. Even for smaller sites, cost estimates can increase as sites progress through the 10-step process.
- **3.63** Exhibit 3.11 sets out details about the four contaminated sites listed in the Federal Contaminated Sites Inventory that have the highest recorded financial liabilities.
- 3.64 Since 58 percent of active sites have not moved beyond the first 3 steps of the 10-step process, the environmental and financial impacts of federal contaminated sites are not fully known, nor is it easy to know how much funding is needed to address these sites.
- **3.65** We noted that the total estimated financial liabilities for federal contaminated sites is about \$500 million higher than the amount of dedicated funding remaining under the FCSAP program. This shortfall does not include \$1 billion of contingent liabilities (potential additional costs) or any future cost increases from new or updated site assessments and cost estimations. Without enough dedicated funding, many federal contaminated sites may not be assessed, remediated, or risk managed.
- **3.66** Given a risk of financial shortfall, and given that the FCSAP program does not deal with all contaminated sites and that many sites have yet to be assessed or prioritized for action, we looked to see if a consolidated strategy and plan was in place for all federal contaminated sites. We did not find such a strategy and plan in place during the period covered by our audit.
- 3.67 However, we found that individual custodians that seek FCSAP program funding must prepare, every year, a three-year contaminated sites management plan for their participation in the FCSAP program. These plans, which are submitted to the Treasury Board of Canada Secretariat, variously set out activity targets, annual expenditures, remaining challenges, and mitigation strategies. While these plans provide useful information on individual custodians, they are not a strategy and plan for the Federal Contaminated Sites Inventory as a whole.
- 3.68 For the first six years of the FCSAP program, an overall performance measurement strategy and plan were not in place. However, as we were completing this report, management approved a final performance measurement strategy in January 2012. This strategy is to be implemented over the next few years.

The four contaminated sites in the federal inventory with the highest reported financial liabilities

Situation in 2010-11 Contaminated site Property name and location: Port Hope Area Contaminated Sites, Ontario Port Hope Area Classification and last step completed: Class 2—medium priority for action; at step 7, remediation strategy. Responsibility: Natural Resources Canada accepted responsibility to manage. Estimated liability: Protected information. Funded through the Port Hope Area Initiative. Reason for involvement: Contamination of lands by former Crown corporation for which the federal government has accepted financial responsibility. Issues: Estimated 1,380,000 cubic metres of low-level radioactive waste on these sites. Photo: The Port Hope Community Health Closure objectives: Containment of radioactive wastes in above ground engineered facility. Contaminants: Low-level radioactive waste radium 226, uranium, and arsenic. Welcome Waste Management Facility Property name and location: Welcome Waste Management Facility (Port Hope, Classification and last step completed: Class 2—medium priority for action; at step 7, remediation strategy. Custodian: Natural Resources Canada Estimated liability: Protected information. Funded through the Port Hope Area Reason for involvement: Contamination from former Crown corporation and contractual obligation. Issues: Estimated 620,000 cubic metres of low-level radioactive waste. Photo: Port Hope Area Initiative website Closure objectives: Containment of radioactive wastes in above ground engineered facility and operation of treatment ponds and effluent discharge. Contaminants: Low-level radioactive waste radium 226, uranium, and arsenic. Faro Mine **Property name and location:** Faro Mine (Yukon)



Photo: 2008 Status Report of the Commissioner of the Environment and Sustainable Development, Chapter 3

Classification and last step completed: Class 1—action required; at step 7, remediation strategy.

Custodian: Aboriginal Affairs and Northern Development Canada (Northern Affairs Program)

Estimated liability: Protected information

Reason for involvement: Former owner bankrupt—federal government assumed liability.

Issues: Estimated 64,000 hectares of contaminated soil and groundwater on this site. Leaching of acids and metals into groundwater and surface water; long-term treatment of contaminated water (at least 100 years) and sludge, and potential physical instability of tailings dams and waste rock dumps.

Closure objectives: Constructing soil covers over waste sites (over 5 km squared), long-term treatment of contaminated groundwater, demolition of buildings, and site cleanup.

Contaminants: Petroleum hydrocarbons (soil); metal, metalloid, and organometallics.

Exhibit 3.11 The four contaminated sites in the federal inventory with the highest reported financial liabilities (continued)

Contaminated site

Situation in 2010-11

Giant Mine



Property name and location: Giant Mine (Yellowknife, Northwest Territories)

Classification and last step completed: Class 1—action required; at step 7, remediation strategy.

Custodian: Aboriginal Affairs and Northern Development Canada (Northern Affairs Program)

Estimated liability: Protected information

Reason for involvement: Former owner bankrupt; federal government assumed liability.

Issues: 237,000 tonnes of arsenic trioxide dust stored in 15 underground chambers; 16,000,000 tonnes of tailings, which is also arsenic rich; three large tailings ponds that require water treatment and discharge; and eight open pits, with 35 mine openings.

Closure objectives: Perpetual (100+ years) freezing of arsenic trioxide and contaminated soil to prevent release; treating and discharging water from tailings ponds; and covering tailings and open pits.

Contaminants: Petroleum hydrocarbons (soil); metal, metalloid, and organometallics.

3.69 Recommendation. In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should conduct an integrated risk review of federal contaminated sites. Based on this review and determination of priorities, a consolidated plan should be developed by Environment Canada to ensure that inventoried sites are satisfactorily addressed within specified time frames and in accordance with established requirements.

Environment Canada's response. Agreed in principle. As the Secretariat of the Federal Contaminated Sites Action Plan program, Environment Canada has already conducted an integrated risk review of federal contaminated sites as part of the program's renewal, in collaboration with custodian organizations and Treasury Board of Canada Secretariat. As a result of the review, a consolidated plan that included all custodian departments was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The plan directs funding to the highest priority federal contaminated sites within approved resources available under the program.

As Secretariat, Environment Canada administers and coordinates the Federal Contaminated Sites Action Plan across the federal government. However, the responsibility for managing contaminated

sites, as well as ensuring that they are addressed within the plan time frames and approved resources available under the program, rests with each custodian organization.

Treasury Board of Canada Secretariat's response. Agreed in principle. As indicated by Environment Canada, the integrated risk review of federal contaminated sites was undertaken, priorities were established, and a consolidated plan was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The Treasury Board of Canada Secretariat (TBS) provided data from the Federal Contaminated Sites Inventory to support the integrated risk review. TBS also notes that the responsibility to ensure inventoried sites are addressed within the plan time frames and within the approved resources available under the program rests with each custodian organization.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department supports sound risk management and will continue to monitor and manage the sites under its authority with a view to updating the Department's Federal Contaminated Sites Action Plan (FCSAP) management plan on an annual basis. We will also support Environment Canada in its response to the recommendation.

Fisheries and Oceans Canada's response. Agreed. The Department agrees, with the caveat that the plan must be developed on the basis of available resources. We will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.

Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.

Management and accountability

Appropriate management practices are in place, but improvements are needed

- 3.70 As part of our audit, we examined whether arrangements had been put in place to provide strategic direction to and oversight of the management, monitoring, and remediation of contaminated sites. We expected that the government would have created mechanisms to provide strategic direction to manage contaminated sites, including how risk is monitored and assessed, how performance targets are set, and how progress is measured.
- 3.71 Such arrangements ensure that contaminated sites are identified and are properly assessed for the risks they pose to the health of Canadians and the environment. These arrangements should

emphasize a clear understanding of the financial impacts of addressing contaminated sites and should ensure that decisions are transparent concerning whether to remediate a site and how much remediation to do.

- **3.72 Policy framework.** We reviewed the policy framework that provides direction and guidance to departments, looked at whether clear roles and responsibilities had been established, and examined whether the necessary organizational structures had been created to ensure that contaminated sites are managed effectively.
- 3.73 Various Treasury Board policies and guidelines on real property, risk, and financial management apply generally to custodians. One policy—the November 2006 Treasury Board Policy on Management of Real Property—specifically refers to contaminated sites; as a principles-based policy, it makes deputy heads responsible for ensuring that
 - known and suspected contaminated sites are assessed and classified, and risk management principles are applied to decide on the most appropriate and cost-effective course of action for each site;
 - priority is given to sites posing the highest risk to human health and the environment;
 - management activities (including remediation) are undertaken to the extent required for current or intended federal use and are guided by standards endorsed by the Canadian Council of Ministers of the Environment; and
 - the costs of managing contamination caused by others must be recovered, when economically feasible.
- 3.74 This administrative policy allows individual custodians to be flexible and to make their own decisions when managing contaminated sites, whether they will be remediated or addressed in some other way. The policy, which applies to all federal contaminated sites no matter where they are located, is scheduled for review. The Treasury Board of Canada Secretariat has begun that review process.
- 3.75 Federal Contaminated Sites Action Plan program.

Environment Canada provides central guidance and coordination for the Federal Contaminated Sites Action Plan (FCSAP) program with support from the Treasury Board of Canada Secretariat. Environment Canada administers this government-wide program through its FCSAP Secretariat.

- 3.76 We noted that a number of governance structures have been put in place for this program. These structures include an Assistant Deputy Minister (ADM) Steering Committee that is jointly chaired by Environment Canada and the Treasury Board of Canada Secretariat. The ADM committee provides policy direction and strategic oversight for the FCSAP program. This committee is supported at the operations level by the Federal Contaminated Sites Director General Committee, which handles operational and tactical issues, provides oversight and direction to the program, and approves priority sites for remediation. We noted also that the FCSAP Secretariat has created various working groups to address specific issues related to managing contaminated sites.
- 3.77 We found that the FCSAP Secretariat has issued guidance for helping custodians to manage contaminated sites. An FCSAP guidance manual was issued in 2008; it describes roles and responsibilities, program objectives and eligibility requirements, and the funding approval process. Also, in July 2010, the Treasury Board of Canada Secretariat issued updated guidelines for custodians to use when preparing their individual contaminated sites management plans. The Treasury Board Secretariat also issued a guide for inputting information into the Federal Contaminated Sites Inventory.
- 3.78 In 2009, Environment Canada completed a program evaluation of the FCSAP program. At the time of our audit, the Treasury Board of Canada Secretariat and Environment Canada were tracking progress on carrying out recommendations from the program evaluation.
- 3.79 Custodial departments. Individual custodians are responsible for particular contaminated sites within the federal government inventory. For this reason, the management and oversight activities for these federal contaminated sites rest with the individual custodians.
- 3.80 Our review in selected custodial departments found that policies and procedures are in place for administering federal contaminated sites. For example, in the 2010–11 fiscal year, Fisheries and Oceans Canada implemented a standard site closure process on a departmentwide basis. Individual custodians are continuing to improve their practices. For example, at the time of our audit, Aboriginal Affairs and Northern Development Canada was developing standard practices for closing sites.

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- **3.81** However, we found three significant system gaps that affect custodians:
 - Standardized reporting practices for FCSAP site closures are lacking. These practices are needed to document consistently the decisions made and results achieved, and to support the status of sites as recorded in the federal inventory.
 - Integrated information systems for managing contaminated sites are lacking. Information systems require reconciliation between the FCSAP and Federal Contaminated Sites Inventory (FCSI) systems. Also, the FCSI system does not include key management information, such as the total estimated full costs of remediation.
 - There is no overall performance measurement and reporting system for the FCSAP program and the sites it supports.
- 3.82 Environment Canada and the Treasury Board of Canada Secretariat have recognized that these gaps exist with regard to FCSAP-funded sites for all custodians. Management was taking steps to address the gaps as we were completing this report. As of January 2012, an FCSAP performance measurement strategy was approved. Also, a site closure tool was under development and is expected to be implemented during the 2012–13 fiscal year.

Reporting does not adequately disclose the significance and financial impact of environmental concerns

- **3.83** Our audit also examined whether mechanisms had been put in place to comprehensively measure and report on contaminated sites, to identify the progress being made, and to determine the environmental and financial impacts of these sites.
- 3.84 Federal Contaminated Sites Action Plan program. We found that Environment Canada produces an annual report for the FCSAP program. The reports contain detailed information about program achievements, resources, and expenditures, as well as FCSAP project locations, activity, and progress. These reports do not, however, cover all federal contaminated sites—only those funded by the FCSAP program, about 8,200 of the some 22,000 sites in the Federal Contaminated Sites Inventory. At the time of our audit, annual reports were three years behind schedule. We noted that the FCSAP Secretariat was making efforts to catch up on late annual reports.

- 3.85 While annual FCSAP reports are produced for management and are placed on the Government of Canada website for anyone to view, they are not required to be formally tabled in Parliament. Environment Canada also does not include in its annual departmental performance reports to Parliament a cumulative and consolidated summary of progress made to date in addressing federal contaminated sites under the FCSAP program.
- 3.86 However, Environment Canada's performance report for 2010–11 contains a link to supplementary tables on "horizontal initiatives." The FCSAP program is one such initiative, but it is not identified as such in the performance report. Unless readers are aware that the FCSAP program is such an initiative, they would not likely follow the link. Certain performance information can be found in the tables. Readers can view, for example, the number of assessments planned and achieved that year by each custodian in the FCSAP program. Environment Canada informed us that the connection between the FCSAP program and the supplementary tables will be made clear in the next departmental performance report.
- **3.87** Federal Contaminated Sites Inventory. We reviewed the federal inventory system to find out what type of information and how much information it contains.
- **3.88** The inventory is important because it is intended to keep the Government of Canada, ministers, members of Parliament, and Canadians informed about the state of federal contaminated sites, including their environmental and financial impacts.
- 3.89 The content of the federal inventory is available to the public on the website of the Treasury Board of Canada Secretariat. While a lot of information is presented, the listing does not include all sites, since about 1,000 sites are suppressed from public view. The Secretariat told us that this is done for security reasons. Nor does the listing show the total estimated financial liability for addressing a federal contaminated site or the total amounts spent to date. The Secretariat told us that financial liability information for a site is not shown because it has been classified as protected information to avoid compromising contract bidding for project work on federal contaminated sites. Therefore, the total expenditure and remaining financial liability for a given site is not visible to the public.
- **3.90** Departmental performance reporting. Custodian departments present information on contaminated sites to Parliament through their individual annual departmental performance reports. The information

presented varies from one custodian to another, and content has not been consistent over the years.

- **3.91** In brief, while information can be found in various places, consolidated information on results to date, compared with what was planned, is not available to Parliament or the public.
- **3.92** Although information about federal contaminated sites can be found, the problem is disparate information and the lack of clear, consolidated reporting in one place. As a result, it is difficult to find out what progress the government has made to date in addressing federal contaminated sites, to what extent environmental and human health risks have been reduced, and what it has cost taxpayers. Information is not as transparent as it could be.
- **3.93** Recommendation. In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should periodically issue a publicly available consolidated report on the progress made by the Federal Contaminated Sites Action Plan program in addressing all federal contaminated sites. This report should differentiate between sites covered by the program and not covered by the program.

Environment Canada's response. Agree with the intent of this recommendation to improve reporting on federal contaminated sites. Environment Canada, as part of its role as Secretariat for the Federal Contaminated Sites Action Plan (FCSAP) program, and in collaboration with custodians and the Treasury Board of Canada Secretariat, will continue to publish annual reports on progress achieved by the program. Starting with the 2011–12 annual report, reporting will be enhanced by including information about the program's progress in addressing sites in the Federal Contaminated Sites Inventory, with the understanding that the FCSAP program is intended to address the highest priority sites.

Treasury Board of Canada Secretariat's response. Agreed. As part of its regular business, the Treasury Board of Canada Secretariat provides data from the Federal Contaminated Sites Inventory for input into the Federal Contaminated Sites Action Plan (FCSAP) annual report prepared by Environment Canada.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department recognizes the importance of transparency and accountability and will work with Environment Canada on a consolidated report on the progress made by the FCSAP beginning in 2011–12.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.

Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.

Subsequent events

3.94 The Federal Contaminated Sites Inventory is a live database and can be updated on a daily basis. As we were finalizing this report, the Treasury Board of Canada Secretariat gave us summary inventory data as of 24 January 2012. As of that date, about 9,100 sites were recorded as closed. This means that as of January 2012, about 42 percent of the total federal inventory was recorded as not needing further action. Also, there were about 1,100 fewer active sites at the initial steps of the 10-step process than there were in March 2011. Nearly all sites were closed at step 1 of the process.

Conclusion

- 3.95 The government has put in place systems and processes to assess the risks of contaminated sites, including the current or potential adverse impact of a site on human health and the environment. The government has a process to prioritize sites for action based on the level of concern they pose. However, the system lacks standard closure reporting as well as clear and measurable expectations for what departments with custodial responsibilities for contaminated sites are to accomplish under the Federal Contaminated Sites Action Plan (FCSAP) program, and by when. Management was working on a site closure tool and a performance measurement strategy at the time we were completing this report.
- **3.96** Action on federal contaminated sites has increased over the past six years under the FCSAP program. Progress has been made, with about one third of the total federal inventory of contaminated sites recorded as closed and not requiring further action as of March 2011.
- 3.97 However, many active sites remain to be remediated. Federal custodians had not begun assessments of about one half of the sites that were active in the federal inventory as of March 2011. As a result, the full extent of risks that federal contaminated sites present to the environment and human health remains unknown. Also, since 81 percent of active sites do not yet have a recorded financial liability, the government cannot know the full extent of the financial impacts of

federal contaminated sites on the public purse. Since environmental and financial impacts are not fully known, the government has limited information for planning and allocating financial resources.

- **3.98** The government has not created a consolidated strategy for ensuring that all federal contaminated sites are adequately addressed. There is a need to assess the risk that financial resources may not be sufficient to achieve planned results.
- 3.99 Transparency is limited when it comes to stating what has been accomplished for money spent. While about \$1.5 billion has been spent to address federal contaminated sites, a performance reporting system does not yet exist to connect money spent with results planned and achieved. There is no consolidated Government of Canada report showing progress in terms of total sites remediated, which sites remain contaminated, what it will cost to remediate them, and what the potential consequences are of not taking action. While information can be found in various places, Parliament and Canadians do not receive a clear picture of the status of federal contaminated sites, the progress made to address them, and the cost involved.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of the audit was to determine whether federal entities have appropriate systems in place to manage and report the financial impact of environmental damages arising from federal contaminated sites.

The word "systems" is intended to cover structures, policies, processes, procedures, mechanisms, and information for achieving control and accountability. By "environmental damage" we mean actual or potential damage to the environment caused by government or industrial activity, including adverse impacts on land, water, and ecosystems.

Scope and Approach

We examined the data in the Federal Contaminated Sites Inventory, internal departmental documentation, and reports to Parliament on actions taken in managing federal contaminated sites for selected federal entities. We also examined the overall management created to provide strategic direction to and oversight of the administration, monitoring, and remediation of contaminated sites.

The entities examined for the audit were

- · Environment Canada,
- Treasury Board of Canada Secretariat,
- · Aboriginal Affairs and Northern Development Canada,
- · Fisheries and Oceans Canada, and
- · Natural Resources Canada.

We did not examine management of the Nuclear Legacy Liabilities Program or shared contaminated sites. We did not visit sites, nor did we conduct detailed file reviews to determine if contaminated sites had been remediated or if sites had been properly closed in the federal inventory.

Criteria

Criteria	Sources		
To determine whether federal entities have appropriate systems in place to manage and report the financial impact of environmental damages arising from federal contaminated sites, we used the following criteria:			
Federal entities have processes and procedures in place to identify, assess, and mitigate the financial impact of environmental damage. (Sources: 2, 7, 9, 10)	Canadian Environmental Protection Act, 1999 Financial Administration Act Federal Accountability Act		
Risk management procedures include initiation, preliminary analysis, risk estimation, risk evaluation, risk control or mitigation, and action or monitoring.	 Federal Sustainable Development Act Federal Real Property and Federal Immovables Act Canadian Environmental Assessment Act Policy on Management of Real Property, Treasury Board, 		
(Sources: 1, 2, 7, 9, 10, 11, 12, 14) Parliament receives information on the financial impacts associated with environmental damage. (Sources: 1, 11, 12) Generic sources for all criteria: 3, 4, 5, 6, 8, 13	2006 8. Expenditure Management System, Treasury Board, 1995 9. Framework for the Management of Risk, Treasury Board, 2010 10. CSA Risk Management: Guideline for Decision Makers,		
	Canadian Standards Association, 2009 11. Policy Framework for Financial Management, Treasury Board, 2010 12. Directive on Contingencies, Treasury Board, 2009		
	 13. Enterprise Risk Management and Internal Control Frameworks, Committee of Sponsoring Organizations of the Treadway Commission 14. Recommended Principles on Contaminated Sites Liability, Canadian Council of Ministers of the Environment, 2006 		

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between 1 April 2008 and 31 March 2011. Audit work was substantially completed on 6 March 2012.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 3. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

Response

Financial implications

3.69 In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should conduct an integrated risk review of federal contaminated sites. Based on this review and determination of priorities, a consolidated plan should be developed by Environment Canada to ensure that inventoried sites are satisfactorily addressed within specified time frames and in accordance with established requirements. (3.54–3.68)

Environment Canada's response. Agreed in principle. As the Secretariat of the Federal Contaminated Sites Action Plan program, Environment Canada has already conducted an integrated risk review of federal contaminated sites as part of the program's renewal, in collaboration with custodian organizations and Treasury Board of Canada Secretariat. As a result of the review, a consolidated plan that included all custodian departments was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The plan directs funding to the highest priority federal contaminated sites within approved resources available under the program.

As Secretariat, Environment Canada administers and coordinates the Federal Contaminated Sites Action Plan across the federal government. However, the responsibility for managing contaminated sites, as well as ensuring that they are addressed within the plan time frames and approved resources available under the program, rests with each custodian organization.

Treasury Board of Canada Secretariat's response. Agreed in principle. As indicated by Environment Canada, the integrated risk review of federal contaminated sites was undertaken, priorities were established, and a consolidated plan was developed and approved by Cabinet for the second phase of the Federal Contaminated Sites Action Plan, which began in 2011–12. The Treasury Board of Canada Secretariat (TBS) provided data from the Federal Contaminated Sites Inventory to support the integrated risk review. TBS also notes that the responsibility to ensure inventoried sites are addressed within the plan time frames and within the approved resources available under the program rests with each custodian organization.

Recommendation	Response					
	Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department supports sound risk management and will continue to monitor and manage the sites under its authority with a view to updating the Department's Federal Contaminated Sites Action Plan (FCSAP) management plan on an annual basis. We will also support Environment Canada in its response to the recommendation.					
	Fisheries and Oceans Canada's response. Agreed. The Department agrees, with the caveat that the plan must be developed on the basis of available resources. We will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.					
	Natural Resources Canada's response. Agreed. As a custodian, Natural Resources Canada concurs with and supports Environment Canada's response.					

Management and accountability

3.93 In collaboration with custodians and the Treasury Board of Canada Secretariat, Environment Canada should periodically issue a publicly available consolidated report on the progress made by the Federal Contaminated Sites Action Plan program in addressing all federal contaminated sites. This report should differentiate between sites covered by the program and not covered by the program. (3.83–3.92)

Environment Canada's response. Agree with the intent of this recommendation to improve reporting on federal contaminated sites. Environment Canada, as part of its role as Secretariat for the Federal Contaminated Sites Action Plan (FCSAP) program, and in collaboration with custodians and the Treasury Board of Canada Secretariat, will continue to publish annual reports on progress achieved by the program. Starting with the 2011–12 annual report, reporting will be enhanced by including information about the program's progress in addressing sites in the Federal Contaminated Sites Inventory, with the understanding that the FCSAP program is intended to address the highest priority sites.

Treasury Board of Canada Secretariat's response. Agreed. As part of its regular business, the Treasury Board of Canada Secretariat provides data from the Federal Contaminated Sites Inventory for input into the Federal Contaminated Sites Action Plan (FCSAP) annual report prepared by Environment Canada.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department recognizes the importance of transparency and accountability and will work with Environment Canada on a consolidated report on the progress made by the FCSAP beginning in 2011–12.

Recommendation	Response						
	Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will support Environment Canada and the Treasury Board of Canada Secretariat to implement the recommendation.						
	Natural Resources Canada's response. Agreed. As a custodiar Natural Resources Canada concurs with and supports Environment Canada's response.						







Report of the Commissioner of the Environment and Sustainable Development

Atlantic Offshore Oil and Gas Activities





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Deep Her Majesty the Queen in Right of Canada, represented by the Minister of Public Works and Government Services, 2012.

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CHAPTER 1

Atlantic Offshore Oil and Gas Activities

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the Auditor General Act.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- · report both positive and negative findings,
- · conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Atlantic Offshore Oil and Gas Activities

Main Points

What we examined

Canada's offshore oil and natural gas exploration and development activities in the Atlantic region are regulated by the Canada—Newfoundland and Labrador Offshore Petroleum Board and the Canada—Nova Scotia Offshore Petroleum Board. The boards are joint federal—provincial bodies. Their core regulatory responsibilities include safety, protection of the environment, and management and conservation of petroleum resources.

The boards are responsible for managing significant environmental risks associated with offshore oil and gas activities. According to the governing legislation, offshore operators are required to respond to spills. However, if the operator cannot or does not take appropriate measures, the board may lead the response to a major spill. The boards may seek support from federal parties, including the Canadian Coast Guard, Environment Canada, Transport Canada, and Natural Resources Canada.

We examined how the boards are managing the environmental risks and impacts associated with offshore oil and gas activities. Our audit work included the boards' procedures for assessing and authorizing offshore petroleum projects; ensuring compliance with environmental requirements; and preparing for and responding to spills. The boards work with the federal departments of Natural Resources, Environment, Transport, and Fisheries and Oceans, including the Canadian Coast Guard. We also looked at the advice and support those departments provide to the boards. Our audit did not include any provincial organizations or private sector operators.

Audit work for this chapter was completed on 24 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

Marine ecosystems in Atlantic Canada are biologically diverse, providing critical habitat for species at risk and migratory birds in locations such as the Grand Banks, Sable Island, and The Gully Marine Protected Area. The offshore regions are also a vital part of the country's economy, providing employment for thousands of people and supporting activities such as aquaculture and fisheries, tourism and recreation, and shipping and transportation.

The potential impacts of an offshore oil spill in Atlantic Canada, such as seen in the Gulf of Mexico in 2010, could be widespread and devastating to the environment, industry, and the livelihoods of many Canadians. As a result, it is essential that the offshore petroleum boards manage the risks and impacts associated with the oil and gas activities they regulate.

What we found

- The boards have applied some good practices when assessing and approving offshore projects and activities, such as seeking input from key stakeholders. However, the boards have not yet established or updated their policies and procedures to guide environmental assessments, nor are they systematically tracking the measures to prevent or reduce environmental impacts. It will be important for the boards to determine how they will meet the objectives of their governing legislation to protect the environment, given the changes introduced by the new Canadian Environmental Assessment Act, 2012.
- The boards have taken adequate steps to ensure that offshore operators comply with environmental requirements. More remains to be done to implement risk-based audits of the operators' management systems, and to establish more formal arrangements for obtaining independent observations of offshore oil and gas activities.
- The boards have managed the current environmental impacts
 associated with oil and gas activities in Canada's Atlantic offshore
 areas in a manner consistent with the existing size and scale of
 operations. However, if a board were to take over the response to a
 major oil spill, the board and the federal entities that might contribute
 to the response efforts are not adequately prepared to play this role.
- Specifically, we found that the response plans of the boards and the federal entities are not coordinated and are sometimes inconsistent; the boards and federal entities have not tested or exercised their collective plans or collective capacity; and several memoranda of understanding are either out of date or not in place. In addition, the Newfoundland–Labrador Board has not yet completed the assessment of the operators' spill response capabilities that it began in 2008.

• Unlike the Newfoundland–Labrador Board, the Nova Scotia Board does not currently regulate activities that produce oil. It expects exploration for oil within its jurisdiction in the near future, and so has work to do to prepare for this.

The entities have responded. The entities agree with our recommendations. Their detailed responses follow the recommendations throughout the chapter.



Introduction

1.1 The offshore oil and gas industry has contributed significantly to the economy of Atlantic Canada. The first offshore well in Atlantic Canada was drilled in 1943, off the coast of Prince Edward Island. Subsequent exploration activity has concentrated on the continental shelf offshore from Nova Scotia and from Newfoundland and Labrador. These efforts found natural gas south of Sable Island in the areas off Nova Scotia in 1969, and oil in the Hibernia field off Newfoundland in 1979. Production of oil began from the Cohasset-Panuke field in 1992 and from the Hibernia field in 1997. Exploration licences are now in place for several areas of Atlantic Canada, including the Gulf of St. Lawrence, the west coast of Newfoundland, and deeper water on the edge of the continental shelf off both Newfoundland and Nova Scotia (Exhibit 1.1).

Exhibit 1.1 Oil and gas activities take place in many areas in the Atlantic offshore



Sources: Adapted from publications of the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board

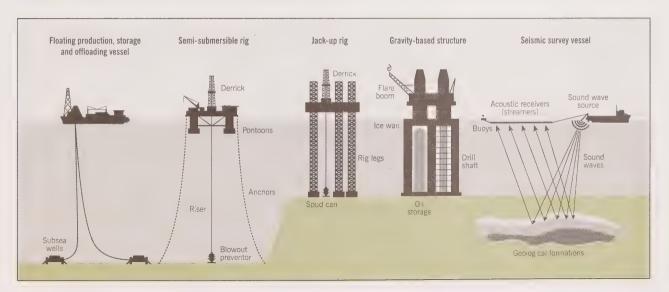
- 1.2 Several private sector companies have conducted operations in the Atlantic offshore, including seismic surveys and exploratory drilling. These operators have drilled more than 370 wells in the regions offshore from Newfoundland and Labrador, yielding discoveries of both oil and natural gas. Only oil has been commercially produced so far. Four projects account for the current production: Hibernia, Terra Nova, White Rose, and North Amethyst (a satellite of White Rose). Together, the four projects produced nearly 100 million barrels of oil in 2011.
- 1.3 In the areas offshore from Nova Scotia, operators have drilled more than 200 wells, resulting in the production of oil and natural gas. In 2011, about 2.8 billion cubic metres of natural gas was produced, all from the Sable Offshore Energy Project. The Deep Panuke project is currently expected to begin natural gas production in 2013.
- 1.4 Production has brought economic benefits. As provided for in the governing legislation, the federal government receives all royalties and other specific revenues generated by offshore oil and gas activity, and then transfers to the two provinces amounts equal to what it receives. For the 2010–11 fiscal year, the federal government received \$225.6 million in royalties and other revenue from oil and gas activity in the areas offshore from Nova Scotia, and \$1.24 billion from activity offshore from Newfoundland and Labrador. The federal government then transferred to the two provinces amounts equal to what it received. At the end of 2010, offshore projects employed 306 people in Nova Scotia and 4,051 in Newfoundland and Labrador. The projects also yielded indirect economic benefits in many different sectors.
- 1.5 Offshore oil and gas activities may have various impacts on the environment (Exhibit 1.2). For example, seismic surveys to identify possible drilling locations may generate underwater noise many times higher than normal ambient levels, and may take place over thousands of kilometres, possibly affecting whales, other marine mammals, and smaller organisms that may be nearby. Drilling and extraction activities generate waste, such as drill cuttings and produced water, both of which may contain hydrocarbons. During production, the practice of flaring (burning off natural gas) releases greenhouse gases and other air pollutants. There may also be accidental impacts, such as oil spills, which may harm seabirds and fish, and could affect the fishing industry and coastal areas.

Drill cuttings Particles that are generated by Jolling beneath the seabed and carried to the surface with drilling fluids

Produced water Water associated with oil and gas reservoirs, extracted along with the oil ind gas. At most offshore production sites, the water is separated from the petroleum, treated, and then discharged to the marine environment or disposed of below the ocean floor.

environmental risks involved in offshore oil and gas production, as well as the need for effective regulation. In 1982, 84 workers died when the Ocean Ranger (a semi-submersible rig) capsized off the coast of Newfoundland. The 2010 Macondo (Deepwater Horizon) blowout and spill in the Gulf of Mexico killed 11 workers and was headline news around the world, focusing attention on the economic and environmental damage from a major incident. In 2012, workers took close to two months to stop a blowout at the Elgin gas well in the North Sea offshore area of the United Kingdom. Companies operating off Canada's Atlantic coast must also cope with a highly challenging environment; compounding the technical and geological risks are icebergs, fog, severe weather, and fields that are far offshore.

Exhibit 1.2 Oil and gas drilling operations may lead to environmental impacts



Accidental impacts

- · Oil spills
- · Chemical spills
- · Gas releases
- · Dropped objects
- Collisions

Operational impacts

- Solid and liquid wastes (including sewage, drainage, and dust)
- · Muds, cuttings, and sediments
- · Discharges of cooling water, ballast water, brines, and drilling chemicals
- · Air emissions from power generation, ventilation exhaust, fuel, and chemical storage
- Flaring
- · Noise and light
- · Disturbance of seabed and rock dumping

Source: Adapted from the OSPAR Commission and environmental assessments

The key players

- Since 1986, the Canada-Newfoundland and Labrador Offshore Petroleum Board has regulated oil and gas activities in areas offshore from Newfoundland and Labrador. Since 1990, the Canada-Nova Scotia Offshore Petroleum Board has performed the same function in the areas offshore from Nova Scotia. Each board was established through mirror legislation in the provincial and federal legislatures. (We refer to them together as the boards and individually as the Newfoundland-Labrador Board and the Nova Scotia Board.) They operate independently of the two levels of government, except when ministers review certain decisions prescribed in legislation.
- 1.8 At the federal level, the enabling legislation is the Canada— Newfoundland Atlantic Accord Implementation Act and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act. (We refer to these together as the Accord Acts.) The two jurisdictions have similar regulations under the Accord Acts, and the boards have worked together to develop shared guidelines for the industry they regulate. (The National Energy Board, an independent federal agency, regulates the offshore industry in other parts of Canada, including the Arctic.)
- Under the Accord Acts, the boards' core regulatory responsibilities include safety, protection of the environment, and conservation of petroleum resources. The boards have indicated that they place the highest priority on safety and environmental protection.
- 1.10 For each board, the federal and concerned provincial government independently appoint an equal number of the board members, and jointly appoint the board's chair. Each board is funded equally by the federal and concerned provincial government. The Nova Scotia Board received a total of \$6.8 million from the federal and provincial governments in the 2011–12 fiscal year and has 39 people on staff. The Newfoundland-Labrador Board received \$14.9 million in 2011-12 and has 72 people on staff.
- 1.11 Several federal departments and agencies have responsibilities related to those of the boards, in particular for environmental protection in offshore areas. They include
 - Natural Resources Canada,
 - Environment Canada.
 - Transport Canada, and
 - Fisheries and Oceans Canada (including the Canadian Coast Guard).

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- 1.12 The federal Minister of Natural Resources, with his provincial counterparts, has overall responsibility for the two boards. The other departments included in this audit provide support only. Transport Canada has regulatory responsibility for marine safety, including Canada's marine oil spill response regime in the case of spills from ships, but does not have any responsibility to respond to spills from offshore facilities. The Canadian Coast Guard has a mandate to respond to spills from ships, but not from offshore facilities. It could provide resources in the case of a spill from an offshore oil and gas facility. Environment Canada and Fisheries and Oceans Canada, among other things, provide scientific advice to the boards. Environment Canada also chairs the Regional Environmental Emergencies Team, an interagency team that brings together experts to provide a single source of advice.
- 1.13 This is the first time that the Commissioner of the Environment and Sustainable Development has audited either of the offshore petroleum boards. However, we have conducted other audits related to environmental issues in offshore regions. In the 2010 Fall Report of the Commissioner of the Environment and Sustainable Development, Chapter 1, we reported on the management regime in place to respond to oil spills from ships. The present report contains two related chapters: Marine Protected Areas and Financial Assurances for Environmental Risks.

Focus of the audit

- 1.14 In July 2011, a federal order-in-council requested that the Auditor General of Canada conduct a performance audit of the Canada–Newfoundland and Labrador Offshore Petroleum Board and the Canada–Nova Scotia Offshore Petroleum Board, and report matters of significance to the House of Commons.
- 1.15 Our objective was to determine whether the offshore petroleum boards, along with other federal parties, have managed the environmental risks and impacts of offshore oil and gas activities according to applicable legislation, regulations, directives, good practices, and agreements with other players.
- 1.16 Our audit focused on how the boards
 - assess and monitor the potential environmental impacts of proposed oil and gas activities;
 - ensure compliance with environmental requirements; and
 - prepare for and respond to spills, in collaboration with other parties.

- 1.17 We looked at selected federal departments with environmental responsibilities related to those of the boards; we did not look at any provincial entities or provincial responsibilities, or at private sector operators. We also excluded occupational health and safety issues. However, we recognize that some unforeseen events may give rise to environmental as well as health and safety issues. We considered such events, as appropriate.
- **1.18** More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Assessing and approving proposed activities

- 1.19 To minimize the environmental impacts due to offshore oil and gas activities, the Canada–Nova Scotia Offshore Petroleum Board (the Nova Scotia Board) and the Canada–Newfoundland and Labrador Offshore Petroleum Board (the Newfoundland–Labrador Board) assess the potential environmental impacts and set requirements for preventing or reducing them. The two boards follow similar steps in reviewing and approving or authorizing offshore activities (Exhibit 1.3). Most of these steps are required under their enabling legislation, environmental assessment legislation, and associated regulations.
- Assessment Act with new legislation. This change came during our audit and affected how the boards are supposed to consider environmental impacts. Under the previous legislation, the boards were required to conduct assessments on a range of activities that included seismic surveys as well as exploratory wells and offshore production facilities. Under the new Canadian Environmental Assessment Act, 2012, and the associated regulations, only production projects are currently required to undergo assessment, and the Canadian Environmental Assessment Agency will lead these assessments.
- 1.21 The boards continue to be responsible for environmental protection under their enabling legislation (the Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the Canada–Newfoundland Atlantic Accord Implementation Act, referred to here as the Accord Acts). The boards have indicated that, in the short term, they plan to apply environmental review processes similar to those required under the old environmental assessment legislation. Four assessments begun under the old legislation are now being continued under the Accord Acts. In addition, under the Canadian

Environmental Assessment Act, 2012, the boards are responsible for assessing projects on federal lands when they have a decision in relation to those projects. The new Act also provides for designated projects begun under the former legislation to be completed by the boards. The Newfoundland–Labrador Board is continuing with two such projects, one of which is described in Exhibit 1.4.

- **1.22** To determine whether the environmental effects of proposed offshore oil and gas activities were appropriately considered, we examined the following steps taken by the boards:
 - conducting strategic environmental assessments.
 - reviewing project environmental assessments, and
 - reviewing applications for authorizations.

Exhibit 1.3 The boards follow well-defined steps when reviewing and approving offshore activities

1. Defining the area of possible activity

- · The Board and operators identify offshore areas for possible exploration.
- The Board conducts a strategic environmental assessment to analyze the potential environmental effects of offshore oil and gas activity in the identified regions and determine necessary measures to mitigate those effects.
- The Board issues a call for bids for exploration licences in specified offshore areas.
- · Parties may submit bids.
- The Board reviews bids and may award licences.

2. Considering a proposal for a specific activity

- An operator submits a project proposal, which includes a project environmental assessment analyzing the potential effects of the proposed activity and defining measures to mitigate the effects.
- The Board reviews the project-specific environmental assessment and seeks input from others.
- The operator submits an application for an authorization of a specific offshore activity.

 Application requirements may include an environmental protection plan or a spill response plan.
- The Board reviews the application, including the environmental assessment, and authorizes the specific activity if requirements are met. Conditions may be attached to an authorization.

3. Conducting the activity

- The operator carries out the activity, and may be required to monitor environmental effects and provide reports to the Board.
- · The Board reviews reports submitted by the operator.
- To ensure conditions are met, the Board monitors actions taken by the operator, reviews reports, and conducts audits and inspections.

Note: This is a simplified version of the actual process. This chapter considers highlighted steps in more detail.

Exhibit 1.4 The environmental assessment for Old Harry will continue

In the Gulf of St. Lawrence, the Old Harry formation is a focus of current exploration interest. In 2008, the Newfoundland–Labrador Board granted a licence for exploration activity, and then launched an environmental assessment process for exploratory drilling in February 2011.

Five Canadian provinces have coasts on the Estuary or Gulf of St. Lawrence. This is one of the largest and most productive marine ecosystems in the world. It is also important economically, being used intensively for fisheries and recreation and as a major transportation route. The Board has noted the high level of public concern about the environmental impacts of offshore petroleum activities in this area.

The Old Harry environmental assessment is being continued, although exploratory drilling is not subject to an assessment under the new *Canadian Environmental Assessment Act, 2012*. The Minister of the Environment designated the environmental assessment of this project for completion. As of the end of our audit, the assessment by the Board was still in progress.

The boards assess environmental impacts at regional and project levels

- 1.23 Strategic environmental assessments. The boards themselves conduct strategic environmental assessments. This type of assessment is a tool that contributes to informed decisions by incorporating environmental considerations into the development of public policy and strategic decisions. The offshore boards have applied the tool to analyze broad geographic areas, and to identify areas or components of the environment that are particularly sensitive and should be avoided or protected by using mitigation measures. Assessments may also identify key information gaps. The results can reduce the time and effort required to assess project-specific environmental effects, which operators do later in the approval process.
- **1.24** According to international practices and guidance prepared by the Canadian Environmental Assessment Agency, a strategic environmental assessment should include
 - examination of alternatives to the proposed plan or program,
 - effective public participation, and
 - consideration of environmental information early enough to influence decision making.
- 1.25 At the end of our audit, the Newfoundland–Labrador Board had completed six strategic assessments covering all of the major offshore areas, and had amended one assessment and was also updating it. The Nova Scotia Board had completed assessments for four areas (one in conjunction with the Newfoundland–Labrador Board) and was conducting two new assessments.

1.26 We found that the boards have applied some good practices. For example, the boards sought input from key stakeholders, including federal departments and the public. We noted, however, that there were some weaknesses. For example, the final strategic environmental assessment did not always incorporate the input from federal experts. Further, in all four cases we examined, the boards issued a call for bids before the assessment was completed. In one of these cases, the responsible board awarded exploration licences before the assessment was finished. Although the boards took some steps to communicate preliminary results, potential bidders did not always have complete information about the environmental constraints and required protection measures until near the end of, or after, the bid preparation process.

1.27 Recommendation. To maximize opportunities for protecting the environment and to ensure that potential project proponents have the environmental information to make appropriate decisions, the boards should ensure that the results of up-to-date strategic environmental assessments are available prior to issuing a call for bids.

The boards' response. Agreed—in principle. The boards have in place processes that maximize opportunities for protecting the environment and disseminating environmental information while also ensuring the fairness and efficiency of the rights issuance regime.

The boards' practice regarding strategic environmental assessments (SEAs) is to ensure that the results of up-to-date SEAs are known either ahead of the issuance of a call for bids, or sufficiently in advance of the closing of a call for bids and ahead of irrevocable decisions that would be taken by bidders and by the boards.

With respect to the Nova Scotia Board, this practice is based on joint policy direction by the federal and Nova Scotia governments. The Newfoundland–Labrador Board has no such restriction.

Consistent with the recommendation, the boards plan to maintain current SEAs in areas where there is the most potential for petroleum exploration and where future calls for bids are most likely.

If there is not an SEA (or updated SEA) available at the time of a call for bids, the call document would state that, ensuring full transparency of the process. In addition, the call would be made without prejudice to the environmental assessment process. The issuance of an exploration licence by the Board is also subject to fundamental decision approval by the federal and respective provincial governments.

- 1.28 Project environmental assessments. Operators conduct project environmental assessments. This type of assessment is recognized internationally as an effective way for decision makers to minimize environmental impacts. Once individual projects are proposed for a specific location, the boards require operators to assess the expected environmental effects. The boards treated the different phases and steps of offshore oil and gas developments as separate projects. We observed that of the 54 assessments performed since 2003, 3 were detailed analyses of major projects (comprehensive studies) and the remainder were screenings of the possible environmental effects, mainly related to seismic surveys.
- 1.29 We conducted interviews and examined documents on selected project environmental assessments undertaken since 2003 to determine whether the boards appropriately considered the possible impacts of proposed projects and the significance of adverse environmental effects. For example, the boards are not supposed to approve any proposal until the required project environmental assessment is finished. We found that, as required, the boards reviewed and approved project environmental assessments before approving the projects. They also coordinated the review by appropriate federal departments, held appropriate consultations, and identified mitigation measures and monitoring programs. However, both boards lack up-to-date and approved policies and procedures for guiding their review of project environmental assessments. Given the new legislation that came into force in July 2012, such policies and procedures will be particularly important as the boards reconsider how they will review project environmental impacts.
- 1.30 We found that both strategic and project environmental assessments identified some information gaps—for example, related to the effects on seabirds from drilling and operating wells (Exhibit 1.5), the effects of seismic surveys, and the effects of trace contaminants in produced water. Although some research is under way, incomplete scientific research and information in these areas could limit the ability of a range of organizations to assess and monitor environmental effects.
- 1.31 The ability of the federal government to address some of these information gaps may be affected by changes at a key government research centre within Fisheries and Oceans Canada: the Centre for Offshore Oil, Gas and Energy Research. The Centre coordinates nationwide research into the environmental and oceanographic impacts of offshore petroleum exploration, production, and transportation. Fisheries and Oceans Canada has indicated that the Centre's in-house research on the biological effects of oil and gas will be phased out.

Exhibit 1.5 The effects of offshore projects on seabirds need to be better understood

Many species of seabirds are protected under the *Migratory Birds Convention Act, 1994*, but seabirds may be killed or injured when they are attracted to offshore oil and gas platforms by increased food availability, lights, or natural gas flares. Seabirds are sometimes also exposed to oil sheens from operational discharges or spills. Studies have shown that oil-fouled feathers affect the buoyancy of birds and their ability to regulate their body temperature when swimming in cold water, with a possible result of death by hypothermia or starvation. In addition, ingested oil can impair the functioning of birds' internal organs.



Leach's storm-petrel

Photo: John Chardine, Environment Canada

Some offshore operations are located in critical feeding areas for certain migratory species, including Leach's storm-petrel, and diving auks such as dovekies and murres. Experts have pointed to the need for more research to estimate the effects on birds of light attraction, flaring, oil sheens, and fouling of feathers by substances that are discharged during drilling and production, such as synthetic drilling fluids.

1.32 Recommendation. The boards should work with their federal partners, including Environment Canada and Fisheries and Oceans Canada, to identify and address the key information gaps in strategic and project environmental assessments.

The boards' response. Agreed. The boards will continue to identify priority areas of research in cooperation with federal departments and agencies and other stakeholders. This would be for targeted research by government departments and agencies, through initiatives such as the Environmental Studies Research Funds and the Program of Energy Research and Development, and through a wider body of domestic and international work in specific areas. This will be done on an ongoing basis.

Environment Canada's response. Agreed. Environment Canada will work with the boards to determine key information gaps in strategic and project environmental assessments.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will continue to support the boards by providing expert advice during the environmental assessment of projects according to their memoranda of understanding and the Department's mandate.

1.33 Authorizations. The boards issue authorizations for activities, including seismic surveys, and drilling and production operations. Between January 2010 and June 2012, the Nova Scotia Board issued 6 such authorizations and the Newfoundland–Labrador Board issued 14.

Environmental protection plan -A plan outlining the key environmental requirements for drilling or production operations, including allowable limits of contaminants in produced water, acceptable methods for disposing of drill cuttings, and a list of the chemicals that can be used

Depending on the activity to be authorized, requirements for additional information could include an environmental protection plan, a spill response plan, or plans for other environmental measures, such as procedures for controlling discharges of oil. We assessed whether the boards checked that operators had supplied the necessary environmental information for authorization applications. We examined the summary files associated with all authorizations from this time period pertaining to drilling, production, and geophysical activities for both boards. We found that these records indicated that the applications contained all the required environmental information.

1.34 Under the regulations governing Atlantic offshore petroleum drilling and production, applicants for some authorizations must submit an environmental protection plan to the responsible board. The plan contains the commitments made by the operators, and may be subject to audits or inspections by the board. We examined all current environmental protection plans and found that they were up to date or being revised, and that, in combination with other documents, they contained all of the key components required by the regulations.

Monitoring environmental impacts

- 1.35 According to the Canadian Environmental Assessment Act, the Accord Acts, the Species at Risk Act, and various regulations, guidance, policies, and procedures, the boards need to ensure that monitoring and follow-up programs are implemented for approved project environmental assessments and authorizations. We assessed three categories of monitoring resulting from these requirements:
 - follow-up programs to track the requirements for mitigation measures and monitoring for approved projects, and to verify that these requirements were implemented;
 - systematic environmental effects monitoring programs to compare predicted impacts with the observed impacts; and
 - programs to measure the impacts on species at risk.

The boards do not systematically track environmental assessment mitigation and follow-up measures

1.36 According to environmental assessment legislation, follow-up programs are intended to verify the accuracy of environmental impact predictions and to determine the effectiveness of any mitigation measures. We selected 11 project environmental assessments, focusing on a range of project types and those most recently approved by the boards, to see how the mitigation and monitoring requirements were implemented.

- 1.37 For some projects, such as drilling wells, the mitigation measures are described in detail in the environmental protection plan. For other projects, such as seismic surveys, mitigation measures appear in several places, including in environmental assessments, as conditions on authorizations, or in correspondence with operators. Based on the files and other information, we found that neither board had procedures to systematically track what mitigation and follow-up measures were required.
- 1.38 We also looked at how the boards tracked implementation of the mitigation and follow-up measures over time. As their main source of information about the implementation of mitigation measures, the boards rely on the daily, weekly, and monthly reports received from the operators. These reports include a variety of measurements but do not always link the measurements to the mitigation measures. As a result, the boards are not systematically tracking whether and how well the operators have implemented mitigation measures.

Environmental effects monitoring programs help advance understanding of the impacts of offshore oil and gas activities

- 1.39 Environmental effects monitoring programs can be valuable tools for measuring the environmental effects of offshore oil and gas activities, testing the predictions of the project environmental assessments, identifying emerging concerns, and, if appropriate, improving mitigation measures. Based on reviews of the operators' environmental assessments of each of the major offshore projects, the boards have required operators to establish programs that systematically monitor the environmental effects of their activities. Monitoring may also be required to track long-term effects after a spill.
- 1.40 We examined whether the boards had ensured that the operators designed and executed their environmental effects monitoring programs appropriately. This included ensuring that
 - the programs measured the appropriate components of the environment,
 - the program design was scientifically sound, and
 - there were appropriate quality controls.
- 1.41 We noted that the operators at different offshore facilities are tracking different combinations of environmental components, based on the location of the facilities. For example, all of them measure toxic substances in produced water, but they monitor different fish and shellfish species depending on the abundance and commercial

importance of those species in the project area. In Nova Scotia, the monitoring programs track seabirds and marine mammals. In Newfoundland and Labrador, however, similar monitoring efforts are not part of the environmental effects monitoring programs. Instead, two of the three operators of major projects monitor marine wildlife by using observers aboard offshore platforms and vessels. Work by Environment Canada also contributes to understanding of the projects' effects on marine migratory birds.

- 1.42 We found that board staff and experts from the federal government and other agencies examine whether the operators have designed and implemented their environmental effects monitoring programs appropriately, and whether reporting is accurate. The boards rely on the input and expertise of the federal experts to ensure program quality. We examined the comments received for four projects (one for Nova Scotia, and three for Newfoundland and Labrador) and found that the experts were satisfied with the quality of the monitoring programs for three of them. In one program, the experts raised significant concerns, particularly about the quality of the monitoring of seabirds and fish habitat. The board considered this advice in its final approval of the environmental effects monitoring reports.
- 1.43 Regular review of the monitoring results by the boards, departmental experts, and other specialists can help in evaluating the adequacy of regulations, guidelines, and conditions attached to authorizations. Regular review can also help ensure that operators work toward continuous improvement based on new scientific information. We found that the results from the monitoring programs were used to adjust the programs for subsequent years, to help design monitoring programs for new projects, and to help develop revisions to guidelines. An up-to-date and accurate understanding of the effects of offshore oil and gas activities is necessary so that environmental assessments and authorization reviews focus on the most important issues.
- 1.44 The boards have worked with the operators to make some of the methods and results of monitoring programs publicly available, but results from some operators' monitoring programs are not generally accessible. The Accord Acts place some constraints on what information can be released and when. In our view, improved accessibility would help ensure scientific credibility and promote public understanding of the actual impacts of offshore oil and gas operations.

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Full public access would also improve the ability to share lessons between projects and between boards, and would facilitate research by government, industry, and academia.

1.45 Recommendation. The boards should work with the operators to improve the transparency, accessibility, and utility of the environmental effects monitoring programs and the results obtained. This should include facilitating continuous improvement and collaborative research involving industry, government, and academia, with the aim of improving understanding of the effects of oil and gas activities on the offshore environment.

The boards' response. Agreed. The Newfoundland–Labrador Board currently publishes the results from environmental effects monitoring programs on its website. It will continue to work with operators and government agencies and external reviewers to ensure that the programs remain transparent and relevant. Subject to the cited constraints of the Accord Acts, the Nova Scotia Board will seek the cooperation of relevant parties to implement this recommendation.

Responsibilities for monitoring species at risk need clarification

- 1.46 The federal *Species at Risk Act* requires the boards to ensure that measures are taken to monitor the adverse effects of offshore projects on species listed under the Act and on their critical habitat. In the offshore area, the species concerned are mainly seabirds (such as the ivory gull), fish (such as the Atlantic wolffish), marine mammals (such as the North Atlantic right whale), and turtles (such as the leatherback turtle). Monitoring is required regardless of the significance of the adverse effects and is required for all wildlife species listed under the Act.
- 1.47 We found that species at risk are currently being monitored under other monitoring programs, such as those intended to avoid impacts on marine mammals from seismic surveys, or the seabird and marine mammal observation programs (see paragraph 1.41). However, neither board has policies and procedures in place related to their obligations under the *Species at Risk Act*. A clear set of such procedures is now especially important with the new environmental assessment legislation, given the boards' roles as federal authorities and their responsibilities regarding federal lands.

Ensuring compliance with environmental requirements

1.48 As the regulators for oil and gas activities, the boards need to ensure that operators comply with environmental requirements. To guide their oversight of operator compliance, both boards have policies based on the Accord Acts and regulations. The policies describe the roles, responsibilities, authorities, and tools used by the boards. The boards assess compliance by conducting audits and inspections and by reviewing operators' reports. If there are concerns about non-compliance, the boards may formally investigate and take other steps (see paragraph 1.61). We examined these activities to assess whether the boards were taking adequate steps to ensure compliance with environmental requirements.

The boards have not yet fully aligned their audit programs with goal-oriented regulations

- 1.49 At the end of December 2009, revised regulations governing drilling and production introduced a shift from prescriptive to goal-oriented regulation. Instead of specifying which technical requirements should be met and how, the regulatory guidance specifies the environmental goals that the operators are required to meet, and the operators determine how they will meet them. The new regulations are intended to give operators greater flexibility and to support innovation and continuous improvement. This shift influences how the boards determine whether operators are in compliance and how they respond to situations of non-compliance.
- 1.50 The boards use audits as one way to verify that an operator's operating procedures and management systems achieve continuous compliance. In addition, board staff may conduct inspections, involving the presence of a board officer during operations, to confirm that regulatory requirements are met and to support audit findings.
- 1.51 A shift from prescriptive to goal-oriented regulations will typically lead to changes in audit approaches. For example, operators applying to the boards for drilling and production authorizations for offshore activity are now required to have a management system in place, with documented policies and procedures for carrying out their activities in compliance with environmental requirements. We found that board employees review the operator's environmental protection plans to ensure that management systems are in place. The commitments in the operators' environmental protection plans also provide a basis for audits and inspections.
- 1.52 Both boards have begun to conduct audits that examine management systems. Their policies suggest a goal of one such audit

per operator per year. However, the Newfoundland–Labrador Board has not met this goal. In the case of the Nova Scotia Board, it is too soon to make this assessment, since it just finalized its policy in March 2012. The boards' policies and procedures do not distinctly define management system audits. It is therefore difficult to distinguish such audits, which check for the presence of appropriate systems, from inspections, which check for compliance with technical requirements. When we looked at the audits and inspections completed since 2009 at both boards, we found that they tended to be based on prescribed requirements rather than on how well management systems were working. The boards have taken steps to strengthen their audit functions with this in mind.

- 1.53 Given the number of employees available at both boards to conduct audits and inspections, the boards need to identify audits carefully so that they focus on key risk areas, such as poor compliance history. We found that the boards select audits and inspections based on professional judgment, but that neither board has a documented or systematic process for identifying which aspects of which operations should be audited based on specific risks. In our view, systematic audit planning is important given the shift to a goal-oriented regulatory environment, particularly if exploration and development activities in the region increase.
- **1.54 Recommendation.** Each board should establish a systematic process to prepare an annual risk-based audit plan and use it to implement audits of operators' management systems in keeping with board policies.

The boards' response. Agreed. The boards will incorporate a risk classification matrix into their current auditing and inspection policies and procedures to further strengthen the systematic manner in which annual risk-based audit plans are developed. This will be done commensurate with the scale of offshore operations within the respective jurisdictions.

The boards rely on operator reports to assess compliance

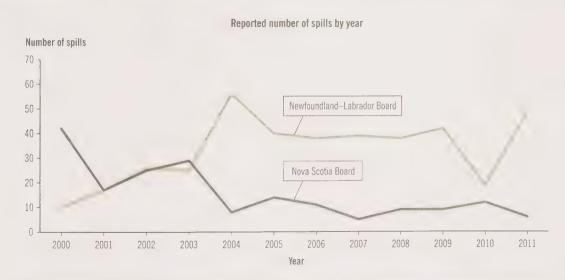
1.55 To demonstrate compliance with regulatory requirements, operators are required to submit reports detailing the status of their work programs as well as to report on sampling and testing results. As noted earlier, board employees indicated that their review of the operators' daily, weekly, and monthly reports is a primary method to assess compliance. We noted in paragraph 1.37 that the boards did not have a systematic procedure to guide their review of operators' reports,

making it difficult to evaluate compliance with mitigation and monitoring requirements. We examined two further aspects of how the boards used reports from operators to assess compliance: whether the boards received and reviewed the required annual environmental reports, and how the boards tracked information about spills.

- 1.56 Annual environmental reports. For each offshore production project, operators are required to provide an annual environmental report that summarizes environmental matters for the year. We found that operators submitted the reports as required, with the required content. The reports supplied information about spills, for example, along with extensive information collected from weather and wave monitoring. The boards give operators guidance about what the annual reports should contain. However, the boards have not used the reports as opportunities to help focus the operators' management systems on key environmental issues or to promote continuous improvement. Partly because of constraints in the Accord Acts, the information in the reports is not publicly available and therefore cannot contribute to a better scientific understanding of the offshore environment.
- 1.57 Information about spills. Operators are required to report all oil or gas spills to the responsible board. The board then reviews and, if necessary, investigates each spill. We examined whether the boards took adequate steps to ensure that all spills were reported to them and properly managed.
- 1.58 We found that both boards have obtained information from the operators about spills and have reported this information publicly (Exhibit 1.6). The boards rely on reports from operators to find out about the occurrence of a spill, its size, the substances involved, the circumstances, the root cause, and whether the spill was cleaned up.
- 1.59 We examined board records for the last two years and found that the boards tracked the operators' responses to spills. The boards indicated that operators had successfully addressed all spills. Although we did not conduct formal audit tests outside the boards on this aspect, no documented cases came to our attention involving failure of an operator to report a spill.
- 1.60 Board officers may visit a spill location if they judge it necessary from the information reported to them. However, we found that the boards had few additional options for obtaining independent observations of spills and the success of cleanup actions. One way the boards currently obtain such information is through Transport Canada's National Aerial Surveillance Program. Consistent with

the Department's mandate, this program is focused on spills from ships. For its monitoring work, the program has an aircraft based in Moncton, New Brunswick, equipped with oil spill detection capabilities, and an arrangement with Provincial Airlines, based in St. John's, Newfoundland, to visually monitor offshore areas. However, the boards have not established any formal arrangements with Transport Canada to obtain surveillance services. Nevertheless, aircraft from the program have carried out flights over oil and gas production areas, and reported spills that they spotted. The Integrated Satellite Tracking of Polluters initiative, led by Environment Canada, also collects information about spills and may report spills observed, but again there is no formal working arrangement between the boards and the Department to ensure that specific concerns are identified.

Exhibit 1.6 Both boards have reported the number and volume of spills



	Yearly total volume of reported spills in thousands of litres*											
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Newfoundland– Labrador Board	4:9	5.7	12.3	31.4	274.0	4.2	4.3	75.2	4.9	0.3	0.2	34.0
Nova Scotia Board	1.8	0.2	7.6	27.5	357.5	1.2	159.3	0.08	0.03	0.2	0.7	0.4

^{*} Where a reported spill volume was a range, the maximum of the range was used. The reported spills include several different substances, such as diesel fuel and hydraulic oil.

Sources: Canada-Newfoundland and Labrador Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board

Non-compliance situations seldom require the use of legislated enforcement tools

- **1.61** The Accord Acts equip the boards with a variety of tools in the event of non-compliance. For example, they can
 - · issue orders to comply,
 - suspend or revoke an authorization or operating licence,
 - refer a matter for prosecution, or
 - assume control of operations.

Prosecution of a case of non-compliance can result in fines and penalties.

- 1.62 In alleged non-compliance situations, the boards can undertake formal investigations to determine the appropriate enforcement action. We found that since 2009, the Nova Scotia Board has not dealt with any environmental incidents that warranted investigation. In 2011, the Newfoundland–Labrador Board investigated one incident of a reported spill of 26,400 litres of synthetic drilling fluid into the ocean. As a result of the investigation, charges were laid and financial penalties were applied.
- 1.63 Both boards cite the operators' desire to protect their reputations as an important driver of compliance. We found that most situations of non-compliance were resolved without the use of more serious measures or enforcement tools. The two boards use different combinations of letters and notices to achieve compliance. Both boards have policies outlining how they will escalate their response in a case of non-compliance, if necessary.

Preparing for and responding to spills

1.64 As illustrated by the Macondo (*Deepwater Horizon*) spill in the Gulf of Mexico in 2010, major spills (Exhibit 1.7) are among the most significant contributors to the environmental impact of oil and gas activities. They are relatively infrequent (Exhibit 1.8), but can have severe and long-lasting consequences. A spill from a ship involves a well-defined and limited quantity of oil, but it is difficult to predict

Exhibit 1.7 Definitions of major spills vary

The severity of spills is defined in two main ways: by the size of a spill or by the players involved in the response and what roles they play, with more significant spills requiring resources from other players, possibly from other parts of the world. We observed that different players involved in offshore spills in Atlantic Canada use different and sometimes inconsistent ways of categorizing spills and of deciding when more significant effort is required. For the purpose of this chapter, a major spill is one requiring response activities by the operators together with the boards and other federal entities.



Skimming oil from the surface of the ocean after a spill

Photo: National Oceanic and Atmospheric Administration Office of Response and Restoration the amount of oil that might ultimately be released from underground reservoirs as a result of loss of well control (a blowout).

1.65 The environmental risks associated with oil production are higher than those associated with gas production. In Nova Scotia, natural gas accounts for all current production. If a well blowout happened there, the environmental risk would be relatively low and the safety risk would be high because of the possibility of an explosion. In Newfoundland, crude oil accounts for most production; a blowout or major spill there would pose significant environmental and safety risks. As well, the operating environment is more severe in the areas offshore from Newfoundland and Labrador than off Nova Scotia, and those conditions could raise greater obstacles to a rapid or effective spill response. If new deepwater wells are drilled for oil off the coast of Nova Scotia, the activities will entail increased environmental risks to be managed by the Nova Scotia Board.

1.66 When a spill occurs, an operator has two immediate responsibilities: to report the event to the responsible board, and to respond as soon as possible with reasonable measures aimed at preventing further spillage and minimizing the environmental impact. The operator would lead the response, guided by its own spill response plan. As set out in the Accord Acts, the responsible board must monitor the operator's activities, and can give direction to the operator. The Acts also provide that if the operator does not or cannot fulfill its responsibilities, the board may take over the spill response. Although neither board has had to play this role in the past, if one did take over managing a spill response, it would coordinate its actions with federal departments and agencies.

Exhibit 1.8 Large oil spills have not been frequent

Historical averages suggest the following probabilities for incidents involving offshore oil platforms. These estimates should be used with caution.

Type of spill	Spill size	Rate of occurrence
Blowout from an exploratory well	Very large (more than 10,000 barrels)	Less than 1 in 1,000 per well drilled
Blowout from a producing well	Very large	Less than 1 in 10,000 per well per year
Spill from a platform	Large (more than 1,000 barrels) Example: the 2004 Terra Nova spill off the coast of Newfoundland	Less than 1 in 10,000 per well per year
Spill from a platform	Medium (1 to 1,000 barrels)	Less than 1 in 10 per well per year

Sources: Environment Canada; Det Norske Veritas; American Petroleum Institute; environmental assessments for Hebron and Old Harry projects

- 1.67 We examined each board's review of operator spill response plans, as well as the extent to which the board's own emergency response plans contained key elements. Based on our review of national and international standards, applicable regulations and guidance, and other sources, we assessed whether the response plans contained the following key elements:
 - a clear statement of who will do what, including who will lead the response under different circumstances;
 - an assessment of the risks;
 - the means to detect spills quickly and accurately;
 - the means to predict the future path of the spill (this requires upto-date information about the type and volume of oil spilled);
 - access to people with the necessary expertise and training;
 - adequate resources;
 - · coordination with other related response plans; and
 - appropriate exercising and testing of the plans.

Gaps in these areas would have different consequences for the two boards, given the different contexts and associated risks. We also examined how the boards, together with federal partners on which they could depend in the event of a major spill, are collectively prepared to respond.

The Newfoundland-Labrador Board has not obtained adequate assurance that operators are ready to respond effectively to a spill

- 1.68 As part of the process of obtaining authorization to drill or operate a well, operators are required to submit spill response plans for board review. We examined how the boards reviewed the plans. We found that requiring operators to seek regular renewal of authorizations ensured that plans were up to date and that they included most key elements. However, neither board had formal, systematic methods for reviewing spill response plans.
- 1.69 In 2008, the Newfoundland–Labrador Board raised concerns about whether producing operators under its jurisdiction had spill response capabilities that were effective and consistent with good practices in other jurisdictions. By 2009, the Board had required all producing operators to review their spill response capability. Three years later, the Board has not yet finished assessing whether operators have sufficient equipment and resources. Between 2009

Dispersants—Chemical products that accelerate the breakup of oil slicks. They work like dish soap by changing the surface tension of the oil so it breaks apart into very small droplets that mix more easily with water.

and 2012, the Board issued six production authorizations. It also found that operators assumed they would be able to use chemical dispersants in the event of a major spill. In fact, there are several legal barriers to the use of dispersants in Canadian waters, and the Newfoundland–Labrador Board has indicated that more work is needed to determine if the chemicals are an effective countermeasure against spills of some types of oil under its jurisdiction.

1.70 Recommendation. The Newfoundland–Labrador Board should complete its review of the spill response capability of operators under its jurisdiction as soon as possible.

The Board's response. Agreed. The Newfoundland–Labrador Board will complete its review by 31 March 2013.

1.71 We also identified gaps in the Newfoundland–Labrador Board's review of the arrangements that operators are supposed to have in place to obtain equipment and personnel in the event of a spill. Some of the operators have plans that indicate that they could rely on the Canadian Coast Guard to provide resources for their spill response; however, the Coast Guard does not have a specific mandate to respond to spills from offshore oil and gas facilities. In recent years, the Coast Guard has participated only as an observer in operator response exercises. The plans also indicate that operators would employ Canadian and international private sector response organizations for response services if a major spill occurs. Transport Canada has certified Canadian private sector organizations to respond to spills of up to 10,000 tonnes of oil from ships. However, no regulator has certified the capacity of these organizations to respond to offshore oil and gas spills, or considered the possibility of conflicting demands for their resources.

1.72 Recommendation. The boards should seek the advice of Transport Canada, the Canadian Coast Guard, and international partners to design an approach for third party verification of the capacity of organizations that would respond to spills from offshore oil and gas facilities.

The boards' response. The boards agree with this recommendation with the following understanding: According to legislation, the boards' role is to assess the adequacy of operators' spill response plans and commitments to ensure their sufficiency and robustness. The operators hold the duty to verify the capacity of any organizations that support those plans.

In keeping with the legislated regulatory regime, the boards commit to tasking operators with defining an approach—to the satisfaction of the

boards—that ensures third party verification of the capacity of organizations that they would rely on for responding to spills from offshore oil and gas facilities. In providing guidance to operators in undertaking this task, and in evaluating the acceptability of proposed approaches, the boards will consult with Transport Canada and the Canadian Coast Guard.

The boards' emergency response plans are missing some elements

- 1.73 The boards would be the lead agencies overseeing the response to a spill resulting from oil and gas activities in the offshore areas. As a result, each board needs its own emergency response plan, along with related policies describing when and how the plans would be used. We assessed the boards' plans to see whether they included the same general elements required in the operators' plans (see paragraph 1.67).
- 1.74 We found that both boards recently updated their emergency response plans but that there were gaps related to their description of how they would coordinate with federal organizations and their assessment of the risks (see paragraphs 1.78 and 1.107). In addition, several aspects of the Newfoundland–Labrador Board's plan need improvement given the greater risks faced in areas under its jurisdiction. Internal roles and responsibilities need clarification, as do the training requirements and qualifications for key personnel. The Board does not have in-house technical expertise to manage a major spill or a loss of well control, but it has recently established a contract to obtain some of the drilling expertise it might require to begin to fill this gap. The Board would also have to rely on others to provide spill response equipment, but it has not established the necessary formal arrangements—for example, with private contractors. Finally, we found that, since 2004, the Board has not tested its plan or held emergency exercises that might enable it to identify and address potential problems with the plan.

The boards and supporting federal departments need to do more to prepare for a major oil spill

- 1.75 As we have noted, the two boards currently operate in quite different environments. As a consequence, the potential challenges would be greater for the Newfoundland–Labrador Board if it had to lead a response.
- 1.76 Many players could be involved in providing support during the response to a major spill, including several federal departments and agencies. Given this fact, we looked at different aspects of preparations

for spills. We noted that the federal government has valuable resources and capabilities at its disposal in the case of a major spill. For example, Environment Canada has a database of oil characteristics; this can help predict how oil will behave in the ocean and what the impacts of a spill might be. Environment Canada can also model oil spills to predict where the oil will go. Transport Canada has aerial surveillance capabilities that were used to help respond to the Macondo spill in the Gulf of Mexico (see paragraph 1.60). Environment Canada and Fisheries and Oceans Canada have been researching the use of dispersants on oil from Atlantic Canada sources.

- 1.77 However, we also identified several areas of concern. When taken together, these raise questions about whether the boards and their federal partners are adequately prepared to respond to a major oil spill.
- 1.78 Poorly coordinated plans. We looked for a coordinated, well-defined set of plans that would support an efficient and timely response. In particular, we examined the plans of the two boards and Natural Resources Canada (the federal department having lead responsibility for this type of emergency). Under the *Emergency Management Act*, federal ministers are required to have plans that address risks in their areas of responsibility. We also considered the supporting roles of other federal organizations, including the Canadian Coast Guard and Transport Canada, as well as whether the plans aligned with the overall Federal Emergency Response Plan, the Government of Canada's "all-hazards" response plan.
- 1.79 We found that the plans we examined were inconsistent and did not always take each other into account. As a result, it was unclear who would perform some key roles during a major spill, and how. This situation could delay an effective response and cause limited resources to be used inefficiently. Our observations were consistent with the results of exercises led by Natural Resources Canada in May and November 2011. Natural Resources Canada has not yet acted on some recommendations from these exercises—for example, setting up annual exercises or formalizing collaboration with the boards.
- 1.80 Incomplete board agreements with federal entities. In an emergency, an effective and timely response depends on the efficient use of resources. To achieve the necessary efficiency, it is essential to have in place up-to-date agreements that ensure effective coordination, prevent duplication of efforts, and clarify roles and responsibilities. The Accord Acts require the boards to put such agreements in place. The Nova Scotia Board established memoranda of understanding with Environment Canada in 2003 and with Fisheries and Oceans Canada

in 2004 that address some aspects of spill response. However, we noted that, in general, memoranda of understanding between the boards and federal departments and agencies are out of date or non-existent, or do not cover some important activities. For example, the Nova Scotia Board and the Canadian Coast Guard were working on a memorandum to identify their roles and responsibilities in the event of a spill, but this document was only in draft form at the conclusion of our audit work. The Newfoundland–Labrador Board has a memorandum with the Canadian Coast Guard, but it was signed in 1989 when the Coast Guard was part of Transport Canada, and all departments party to the memorandum have since changed names.

- Unresolved jurisdictional issues between entities. In examining the responsibilities of federal departments and agencies, we noted that there were unresolved jurisdictional issues, some of which could hinder an adequate and timely response. Transport Canada has overall responsibility for the marine oil pollution regulatory regime for ships and has worked with the boards to determine how different spills will be addressed. However, during our audit we heard differing views about when a spill would fall under the Accord Acts, and hence be in the jurisdiction of the boards, or under the Canada Shipping Act, 2001 and be the responsibility of another entity. Partly as a consequence, the possible roles of the Canadian Coast Guard in the event of a major offshore spill need to be clarified, in particular what resources, expertise, and leadership it would provide if one of the boards were leading the response. The boards are updating memoranda of understanding to address some of these jurisdictional points, but they were still in draft form as of the end of our audit.
- 1.82 Inadequate testing. The Newfoundland–Labrador Board and some federal departments observe annual exercises to test operator spill responses but have not tested their own response. The Nova Scotia Board conducts at least one internal emergency exercise annually, but with minimal involvement of federal partners. Natural Resources Canada has conducted a limited exercise of some aspects of the federal response, but the overall federal capacity has not undergone field testing.
- 1.83 Insufficient oil spill response tools. The Canadian Coast Guard has equipment for responding to oil spills from ships and might make it available in the event of a spill from an offshore facility. However, the Coast Guard does not have a mandate to respond to spills from such facilities and so does not have the resources or equipment that might be needed to deal with a major spill. The Coast Guard does maintain a stockpile of dispersant, but (as noted earlier) current rules do not allow

the use of this substance in Canadian waters. The Newfoundland—Labrador Board, together with operators and other federal regulators, is examining how dispersants might be used in the Atlantic offshore. If their use is found to be environmentally acceptable, this would provide another tool for managing and mitigating oil spills.

1.84 Recommendation. The boards should work with appropriate federal departments and agencies, and other organizations as necessary, to ensure that individual and collective response plans for a major oil spill are adequately resourced and coordinated, well defined, and regularly tested, individually and collectively. The plans should be supported by up-to-date and effective memoranda of understanding between all involved parties.

The boards' response. Agreed. The boards are current in their involvement with the operators who, as first responders, are legally required to respond to any spill event.

The boards will continue to work with appropriate federal departments and agencies to ensure that the individual and collective response plans for responding to a major oil spill remain up to date. These plans will be supported by updated memoranda of understanding as appropriate.

The Nova Scotia Board will complete these actions prior to a future exploratory drilling program that may encounter oil (earliest expected date is 2015).

1.85 Recommendation. Natural Resources Canada, the Canadian Coast Guard, Transport Canada, and Environment Canada should work with the boards and others, as necessary, to establish and clarify the roles and responsibilities of federal government departments and agencies in the event of a major oil spill, as well as the resources that would be available. This should include a coordinated response plan.

The departments' response. Agreed (by Natural Resources Canada, Canadian Coast Guard, Transport Canada, and Environment Canada). The roles and responsibilities of federal departments, agencies, and the boards in the event of a spill are established by various acts and regulations. The nature of a spill would determine the departments and agencies involved, as well as their level of engagement. In 2011, Natural Resources Canada and federal departments and agencies conducted two tabletop spill response exercises, and have continued to work together on a range of issues related to oil spills. The departments will work together and with the boards to review roles and responsibilities related to the response to a major oil spill. The review will take into consideration the legal authority, mandate, and available

resources of each organization, and identify gaps, while acknowledging the primary role of the operator in spill response. In addition, Natural Resources Canada commits to hosting an annual simulation exercise with its partners.

The boards have learned lessons from past incidents

- 1.86 Because major spills and offshore incidents are relatively rare, the boards have few opportunities to assess how their spill preparedness and response approaches will work in practice. It is therefore essential for the boards and other federal departments to identify and apply relevant lessons from events in Canada and other jurisdictions. For example, the 2009 Montara blowout off the coast of Australia was attributed partly to inadequate regulatory oversight. Such lessons are a way for regulatory and response regimes to evolve and improve.
- 1.87 Both Canadian boards are members of two organizations that examine lessons learned from internationally significant incidents: the International Regulators' Forum and the International Offshore Petroleum Environmental Regulators' Group. The boards have also taken other steps to share lessons learned and good practices with offshore regulators from other countries.
- 1.88 We wanted to know whether the boards had identified key lessons and put them into practice. The Newfoundland–Labrador Board reviewed and summarized lessons from two major spills: the 2004 Terra Nova spill off Newfoundland and the 2010 Macondo (*Deepwater Horizon*) blowout in the Gulf of Mexico. The Board identified the need for
 - broader emergency response training and exercises,
 - access to expertise that would help in overseeing efforts to control a well in the event of a blowout, and
 - an assessment of how dispersants might be permitted and applied as a spill countermeasure in the areas offshore from Newfoundland and Labrador.
- 1.89 We found that the Newfoundland–Labrador Board completed its review of lessons from the 2010 Macondo spill in May 2012 and has taken some steps to apply those lessons. For example, the Board has requested that operators submit information demonstrating how they would integrate the use of dispersants into their response operations. However, we also found that the Board had not finalized its lessons learned report from the 2004 Terra Nova spill and had not acted on



A semi-submersible drilling rig off the coast of Newfoundland

Photo: Greg Locke

several of the identified lessons. For example, the Board had not begun broader emergency response exercises. The Nova Scotia Board has worked with the Newfoundland–Labrador Board to identify and apply the lessons from other jurisdictions.

- 1.90 We assessed whether other federal entities had identified key lessons and put them into practice. We found that all the departments had identified lessons from the Macondo blowout and were acting to apply those lessons. For example, federal departments are working with partners to determine how the use of dispersants might be authorized in the future. In addition, Natural Resources Canada is considering what changes might be needed to liability limits for offshore operators. However, we also noted that several departments identified the need to do more to clarify their roles and responsibilities regarding a response to a major spill in the Atlantic offshore.
- **1.91** Recommendation. The boards should develop and maintain systematic practices for identifying and applying lessons learned from their own and other jurisdictions. They should integrate what they have learned with the boards' procedures for continuous improvement and with lessons learned processes in federal departments and agencies:

The boards' response. Agreed. The boards currently have processes in place by which lessons learned from their own and other jurisdictions are applied. This was shown in the Macondo *Deepwater Horizon* event and by the Review of Offshore Oil-spill Prevention and Remediation Requirements and Practices in Newfoundland and Labrador, with departmental managers at both boards assessing the numerous reports and modifying board practices, where necessary. Internationally, many of these lessons learned are available to us through our charter member status in the International Regulators' Forum and the International Offshore Petroleum Environmental Regulators' Forum in which the Boards will continue their memberships. Additionally, the boards will continue to liaise with federal departments, agencies, and nongovernmental organizations. The boards' internal practices and procedures will be strengthened by applying a systematic process to maintain their high standard.

Supporting key environmental decisions

1.92 The boards must manage a complex set of regulatory activities. We looked at the way the appointed members of the boards oversee key environmental decisions, such as whether to approve major projects, and how the boards ensure that they have the necessary internal and external capacity. We also examined their approach to managing environmental risks.

Oversight by board members could be strengthened

- 1.93 To oversee each board's environmental mandate, the government-appointed members of the board need to work with senior managers to obtain relevant information, weigh options, and document their key operational and policy decisions. Based on the experience of boards of directors in similar situations, we identified several challenges to effective oversight by the boards.
- 1.94 Competencies and experience. Ideally, the appointed board members collectively would have all the competencies and experience required to exercise their responsibilities. Among other things, this means that they would have a background in industry practices and environmental issues. We found that Natural Resources Canada analyzes the competencies of board members to identify gaps in the collective skill set. Despite this, each board does not always have a full complement of members continuously in place with all of the desired competencies and experience.
- 1.95 Reporting. Board members discuss the environmental issues brought to their attention by board staff. We found that Newfoundland–Labrador Board members received quarterly summary reports from staff on environmental issues. Members of the Nova Scotia Board's new Health, Safety and Environment Committee also received regular updates on environmental concerns. We found as well that the members of both boards documented their key decisions on environmental matters.
- 1.96 Organizational structure. Organizations that function effectively have a structure that allows them to make decisions when there are competing views or potentially conflicting aspects of their mandates. In the case of the boards, the Chief Conservation Officer has two responsibilities that could come into conflict: protecting the environment and ensuring that hydrocarbon resources are extracted efficiently. In our view, the boards could reconsider their internal structure to reduce the potential for conflicting responsibilities, although some changes would require amendments to legislation.

The boards need to sustain their internal and external capacity

- 1.97 Internal capacity. The boards must be able to manage their regulatory responsibilities given the size of the industry and the types and extent of activities under way (for instance, the number of approval processes per year). This means having adequate staff, in terms of both numbers and qualifications of their employees. At the same time, the boards need to maintain a critical mass of expertise. For example, we were told that the demands on the Newfoundland–Labrador Board associated with the inquiry into the 2009 Cougar helicopter crash delayed the implementation of new audit and inspection procedures.
- 1.98 In addition, the departure of any board employee should not affect either board's ability to carry out its core functions. In our view, the concentration of responsibilities and experience in a few individuals poses a risk to the organization's capacity to manage the impacts of offshore oil and gas activities—particularly given the lack of up-to-date policies, procedures, and memoranda of understanding with other departments and agencies. During our audit, we noted that from April to August 2012, a single experienced individual at the Newfoundland–Labrador Board temporarily carried the responsibilities of Chair of the Board, Chief Executive Officer, and Chief Conservation Officer—each a substantial and demanding role.
- 1.99 Staff members number 39 at the Nova Scotia Board and 72 at the Newfoundland–Labrador Board. There may be opportunities for the two boards and the National Energy Board to share more functions and expertise so that they are better able to respond to increasing or unexpected demands. For example, all three boards shared responsibilities for the development of their Environmental Protection Plan Guidelines, intended for onshore and offshore operators. Closer ties could benefit all parties, particularly as the National Energy Board moves toward regulating offshore activities in Canada's North. Such arrangements could also support efficient implementation of the new Canada–Quebec accord governing the management of some offshore petroleum resources in the Gulf of St. Lawrence.
- 1.100 External capacity—environmental assessment. The boards depend on the input and support of federal departments and agencies in several ways. During both strategic and project environmental assessments, Environment Canada and Fisheries and Oceans Canada advise the boards on possible impacts, suitable mitigation measures, and the need for follow-up monitoring. The departments' support is essential given the range of different environmental impacts, the need

to be well informed about emerging environmental issues and research, and the small number of environmental staff at each board. The same two departments have also played a critical role in supporting the review of the operators' environmental effects monitoring programs and providing advice about protecting species at risk.

1.101 As noted earlier, the federal government replaced the environmental assessment process in July 2012. The new legislation and regulations will affect what environmental reviews the boards perform and how other federal entities provide expert support to the boards. Staff told us that the boards would continue to assess environmental effects based on their responsibilities under the Accord Acts and as federal authorities under the new legislation. However, it is unclear what support will be available from federal departments and agencies, such as Environment Canada and Fisheries and Oceans Canada—organizations on which the boards have depended for advice and expertise in conducting their assessments. There is no specific requirement for federal authorities to provide this support to the boards for projects not designated under the new legislation. There are memoranda of understanding that outline the expectations for support from federal departments, but these have not yet been revised since the legislative changes came into effect.

1.102 Recommendation. Given the new environmental assessment legislation, the boards should document or update their policies and procedures, and update their memoranda of understanding with their federal partners, including Environment Canada and Fisheries and Oceans Canada, to ensure that the boards will have the capacity for effective environmental review of projects not designated under the Canadian Environmental Assessment Act, 2012.

The boards' response. Agreed. The boards are undertaking a review of their processes for environmental assessment of projects not Assessment Act (S.C. 1992, c. 37), and publishing the associated documents on their websites. The boards have already commenced

Environment Canada's response. Agreed. Environment Canada agrees to work with the boards to discuss their needs, determine what it could provide to address those needs, and reflect any formal agreement in an updated memorandum of understanding.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will continue to work collaboratively with the boards by providing expert advice on fish, fish habitat, fisheries, and aquatic species at risk for existing and forthcoming environmental reviews of projects as per our commitment in the memoranda of understanding. Over the long term, the Department will work with the boards to update the memoranda of understanding to clarify their roles and responsibilities in the light of the recent legislative change (Canadian Environmental Assessment Act, 2012).

1.103 External capacity—advice during emergencies. The interdepartmental Regional Environmental Emergencies Team, chaired by Environment Canada, is intended to provide a single source of scientific advice during a major spill or other emergency. Both boards indicated that they would rely on this expert team in the event of a major spill. As part of the federal budget tabled in 2012, funding for Environment Canada's Environmental Emergencies Program was reduced by half, and the Department now will focus on providing support from a central office in Montreal. It is not yet clear what the impact of these changes will be on the regional team's ability to provide consolidated advice during environmental emergencies or on the boards' ability to obtain such advice during a spill.

1.104 Recommendation. Working with the boards and its other partners, Natural Resources Canada should assess the capacity of the boards to exercise their responsibilities, including how they rely on other federal parties, and should explore opportunities for sharing expertise among those responsible for offshore oil and gas activities.

The Department's and boards' response. Agreed. Natural Resources Canada will work with the boards and the respective provincial governments to assess the capacity of the boards to exercise their responsibilities. The Department will establish a senior level committee to meet regularly to bring together the departments and agencies with responsibility and expertise related to offshore oil and gas activities to further coordination and knowledge sharing.

The boards are willing to be part of an ongoing discussion with relevant federal departments and agencies to ensure that the requirements for effective spill prevention and response and the sharing of expertise and coordination needed for effecting this are addressed on a continuous basis.

Risk management practices could be extended to support better decisions

1.105 A theme that cuts across the different areas we examined is the opportunity for the boards and other responsible federal parties to integrate better risk management practices into their oversight of offshore oil and gas activities. International standards and good practices, and Canadian federal guidance point to two main ways of doing this.

1.106 The first is using enterprise risk management, which involves identifying and managing the key threats that could prevent an organization from achieving its corporate goals. The senior management of the Nova Scotia Board recently put this kind of management framework in place. For example, it identified the need to work toward good alignment with government policy. The Newfoundland–Labrador Board currently does not have a similar framework.

1.107 Second is systematically understanding and managing the risks of different incidents. For example, strategic environmental assessments and project environmental assessments produce some predictions of the risks of possible spills. We found, however, that neither board nor any other federal organization has included an estimation of the combined risks of different kinds of management system failures in its own emergency response plans related to offshore oil and gas activities. This means that the plans may not focus on the key risks. We also noted that neither board has consistently and explicitly identified what risks are acceptable (that is, its risk tolerance).

Conclusion

1.108 Our audit examined whether the Canada–Newfoundland and Labrador Offshore Petroleum Board and the Canada–Nova Scotia Offshore Petroleum Board appropriately managed the environmental risks and impacts associated with offshore oil and gas activities. We looked at whether the boards exercised due diligence when assessing and approving offshore projects and activities, and whether they took adequate steps to ensure that operators complied with environmental requirements. We also considered whether the boards, together with other federal parties, were adequately prepared to respond to spills.

1.109 We conclude that, on balance, the boards exercised due diligence when assessing and approving offshore projects and activities. We also identified some ways in which the boards could improve these processes, such as adopting updated policies and procedures to guide strategic and project environmental assessments, strengthening their monitoring of mitigation measures, and better defining procedures for monitoring species at risk. It will be particularly important for the boards to determine how they will meet the environmental protection objectives of their governing legislation, given the changes introduced by the new Canadian Environmental Assessment Act, 2012. In our view, the timing may be right for Natural Resources Canada to assess the internal and external capacities of the boards to exercise their responsibilities.

1.110 We conclude that while the boards took adequate steps to ensure that operators comply with environmental requirements, several improvements are needed. These include risk-based audits of the operators' management systems, and more formal arrangements for obtaining independent observations of offshore oil and gas activities.

1.111 In the event of a spill from an offshore oil or gas activity, the project operator is required to immediately take all reasonable measures to clean up the spill and prevent further spillage. To date, the boards have ensured that operators have adequately responded to reported spills. However, our audit identified concerns regarding preparations for a future spill: in 2008, the Newfoundland–Labrador Board began an assessment of the operators' spill response capabilities, but the assessment is still incomplete.

- 1.112 The enabling legislation also provides that the boards may take over a spill response if the operator does not or cannot respond immediately or does not take reasonable measures. We found that the boards and the federal entities that may contribute to response efforts are not adequately prepared to respond to a major oil spill if one of the boards had to take over a response. The Nova Scotia Board does not at present regulate activities that produce oil, but it expects exploratory drilling for oil to begin within its jurisdiction soon.
- 1.113 Specifically, we found that the response plans of the boards and federal entities lack coordination and are sometimes inconsistent; the boards and federal entities have not tested or exercised their collective plans or collective capacity; and several memoranda of understanding are either out of date or not in place. Exacerbating these deficiencies are uncertainties about roles and responsibilities in the event of a spill, as well as program reductions at Environment Canada and Fisheries and Oceans Canada.
- 1.114 Overall, both boards have managed the current environmental impacts associated with oil and gas activities in Canada's Atlantic offshore areas in a manner consistent with the size and scale of operations in those regions. However, if a board were to take over the response to a major oil spill, the board and the federal entities that might contribute to the response efforts are not adequately prepared to respond. Although the probability of a major spill in the Atlantic offshore area is relatively low, in our view the boards and the federal departments with support responsibilities need to do more to prepare for such an event.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objectives

The overall audit objective was to determine whether the Canada–Newfoundland and Labrador Offshore Petroleum Board and the Canada–Nova Scotia Offshore Petroleum Board, along with other federal parties, appropriately managed the environmental risks and impacts associated with offshore oil and gas activities. By "appropriately managed," we mean that the two boards acted according to applicable legislation, regulations, directives, and agreements with other players. We also expected the boards to follow good practices for risk management, and for learning and applying lessons from other jurisdictions.

The three sub-objectives were to determine whether the boards

- exercised due diligence regarding environmental risks and impacts when assessing and approving offshore projects and activities;
- took adequate steps to ensure that operators complied with environmental requirements; and
- along with other federal parties, adequately prepared for and responded to spills.

Scope and approach

We focused on the roles and activities of the boards related to environmental protection. We looked at how Environment Canada and Fisheries and Oceans Canada supported board activities by providing advice during environmental assessments. Our work with the federal entities also addressed their roles in spill preparedness and response. For this aspect, we included Natural Resources Canada, Environment Canada, Transport Canada, and Fisheries and Oceans Canada (including the Canadian Coast Guard).

The boards are joint federal—provincial bodies. We did not examine occupational health and safety, resource management, issuance of land rights, or industrial benefits. We also excluded facilities and activities that are outside the boards' regulatory authority, such as pipelines, onshore facilities, and ship traffic. Further, we did not examine the activities of operators.

We examined how the boards assessed and approved offshore projects by looking at a selection of 5 strategic environmental assessments, a sample of 11 project environmental assessments, and all authorizations over the last two years. The samples were chosen to best represent current practices and to reflect a range of different project types and phases.

To assess how the boards were ensuring that the operators complied with environmental requirements, we used a sample of 11 environmental assessments and then chose a mix of different mitigation measures and monitoring requirements that represented a mix of various activities. We also examined all current

annual environmental reports, environmental protection plans, and environmental effects monitoring programs for major projects.

To examine the preparation and response to spills, we looked at all current operator emergency response plans, and all 86 records documenting the response to spills over the last two years.

Criteria

In the table that follows, we have included only selected sources for the criteria. When we refer to the Accord Acts, we mean the Canada—Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the Canada—Newfoundland Atlantic Accord Implementation Act. When we refer to the Drilling and Production Regulations, we mean the Nova Scotia Offshore Petroleum Drilling and Production Regulations and the Newfoundland Offshore Petroleum Drilling and Production Regulations. When we refer to various guidelines, these are guidelines prepared by the two offshore boards.

Criteria	Sources			
To determine whether the offshore petroleum boards, along with other federal parties, appropriately managed the environmental risks and impacts associated with offshore oil and gas activities, we used the following criteria:				
Assessing and approving offshore activities				
The boards conduct strategic environmental assessments.	Cabinet Directive on the Environmental Assessment of Policy Plan and Program Proposals; and associated guidance documents prepared by the Canadian Environmental Assessment Agency Accord Acts			
The boards ensure that environmental assessments are conducted in accordance with the requirements of the <i>Canadian Environmental Assessment Act</i> , the Accord Acts, and their own internal policies and procedures.	Canadian Environmental Assessment Act (repealed July 2012) Accord Acts			
The boards assess applications for authorizations to ensure compliance with the environmental protection provisions of the relevant regulations.	Drilling and Production RegulationsEnvironmental Protection Plan GuidelinesDrilling and Production Guidelines			
The boards provide adequate oversight of the approval decisions for offshore projects and activities.	Canadian Environmental Assessment Act (repealed July 2012) Accord Acts Special Examination of Crown Corporations—Recommended General Criteria and Sub-Criteria, Office of the Auditor General			
Ensuring compliance with	environmental requirements			
The boards ensure that operators have environmental management systems in place and that they are functioning as	Drilling and Production Regulations ISO and Canadian Standards Association (CSA) standards for			

environmental management systems, including 14001-04

and 14004-04

Criteria ``	Sources
The boards take adequate steps to ensure that monitoring and mitigation measures are undertaken in accordance with	Canadian Environmental Assessment Act (repealed July 2012)
environmental assessments, environmental protection plans, and authorizations issued.	Accord Acts
	Species at Risk Act
	Drilling and Production Regulations
The boards take adequate steps to ensure that environmental effects monitoring programs are in place and functioning as	Commitments in strategic environmental assessments prepared by the boards
intended.	Commitments from the project environmental assessments for the major offshore projects
Preparing for and	responding to spills
The boards ensure that offshore operators have adequate	Drilling and Production Regulations
contingency plans in place to respond to spills.	Drilling and Production Guidelines
	Environmental Protection Plan Guidelines
The boards have adequate contingency plans in place that address their own responsibilities.	Accord Acts .
The boards have up-to-date memoranda of understanding with federal parties, and use them to define roles and responsibilities when preparing for and responding to spills.	Accord Acts
	Drilling and Production Regulations
The boards, along with other federal parties, assess the	Accord Acts
adequacy of the combined contingency plans of all parties.	Provisions and commitments of memorandum of understanding between the boards and federal entities
	ISO 14001 and CSA standards for emergency preparedness and response, including CSA Z731-03
The boards have adequate mechanisms to provide assurance	Accord Acts
that all spills are reported to them.	Drilling and Production Regulations
	Canada Oil and Gas Drilling and Production Regulations
	Environmental Protection Plan Guidelines
	Guideline for the Reporting and Investigation of Incidents
The boards monitor the response of offshore operators to spills, assess the appropriateness and timeliness of the response, and take action if necessary.	Accord Acts
	Drilling and Production Regulations
	Environmental Protection Plan Guidelines
The boards, along with other federal parties, identify and apply the key lessons from past spills and other incidents in other jurisdictions.	Commitments in 2010–11 annual reports of Nova Scotia and Newfoundland–Labrador boards

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit focused on practices since January 2010. In some areas, we looked at older decisions that influenced current practices and the current level of environmental protection. Audit work for this chapter was completed on 24 August 2012.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 1. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation Response Assessing and approving proposed activities

1.27 To maximize opportunities for protecting the environment and to ensure that potential project proponents have the environmental information to make appropriate decisions, the boards should ensure that the results of up-to-date strategic environmental assessments are available prior to issuing a call for bids. (1.23–1.26)

The boards' response. Agreed—in principle. The boards have in place processes that maximize opportunities for protecting the environment and disseminating environmental information while also ensuring the fairness and efficiency of the rights issuance regime.

The boards' practice regarding strategic environmental assessments (SEAs) is to ensure that the results of up-to-date SEAs are known either ahead of the issuance of a call for bids, or sufficiently in advance of the closing of a call for bids and ahead of irrevocable decisions that would be taken by bidders and by the boards.

With respect to the Nova Scotia Board, this practice is based on joint policy direction by the federal and Nova Scotia governments. The Newfoundland–Labrador Board has no such restriction.

Consistent with the recommendation, the boards plan to maintain current SEAs in areas where there is the most potential for petroleum exploration and where future calls for bids are most likely.

If there is not an SEA (or updated SEA) available at the time of a call for bids, the call document would state that, ensuring full transparency of the process. In addition, the call would be made without prejudice to the environmental assessment process. The issuance of an exploration licence by the Board is also subject to fundamental decision approval by the federal and respective provincial governments.

1.32 The boards should work with their federal partners, including Environment Canada and Fisheries and Oceans Canada, to identify and address the key information gaps in strategic and project environmental assessments. (1.23, 1.30–1.31)

Response

The boards' response. Agreed. The boards will continue to identify priority areas of research in cooperation with federal departments and agencies and other stakeholders. This would be for targeted research by government departments and agencies, through initiatives such as the Environmental Studies Research Funds and the Program of Energy Research and Development, and through a wider body of domestic and international work in specific areas. This will be done on an ongoing basis.

Environment Canada's response. Agreed. Environment Canada will work with the boards to determine key information gaps in strategic and project environmental assessments.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will continue to support the boards by providing expert advice during the environmental assessment of projects according to their memoranda of understanding and the Department's mandate.

Monitoring environmental impacts

1.45 The boards should work with the operators to improve the transparency, accessibility, and utility of the environmental effects monitoring programs and the results obtained. This should include facilitating continuous improvement and collaborative research involving industry, government, and academia, with the aim of improving understanding of the effects of oil and gas activities on the offshore environment. (1.39–1.44)

The boards' response. Agreed. The Newfoundland—Labrador Board currently publishes the results from environmental effects monitoring programs on its website. It will continue to work with operators and government agencies and external reviewers to ensure that the programs remain transparent and relevant. Subject to the cited constraints of the Accord Acts, the Nova Scotia Board will seek the cooperation of relevant parties to implement this recommendation.

Ensuring compliance with environmental requirements

1.54 Each board should establish a systematic process to prepare an annual risk-based audit plan and use it to implement audits of operators' management systems in keeping with board policies. (1.49–1.53)

The boards' response. Agreed. The boards will incorporate a risk classification matrix into their current auditing and inspection policies and procedures to further strengthen the systematic manner in which annual risk-based audit plans are developed. This will be done commensurate with the scale of offshore operations within the respective jurisdictions.

Recommendation Response

Preparing for and responding to spills

1.70 The Newfoundland–Labrador Board should complete its review of the spill response capability of operators under its jurisdiction as soon as possible. (1.68–1.69) The Board's response. Agreed. The Newfoundland–Labrador Board will complete its review by 31 March 2013.

1.72 The boards should seek the advice of Transport Canada, the Canadian Coast Guard, and international partners to design an approach for third party verification of the capacity of organizations that would respond to spills from offshore oil and gas facilities. (1.71)

The boards' response. The boards agree with this recommendation with the following understanding: According to legislation, the boards' role is to assess the adequacy of operators' spill response plans and commitments to ensure their sufficiency and robustness. The operators hold the duty to verify the capacity of any organizations that support those plans.

In keeping with the legislated regulatory regime, the boards commit to tasking operators with defining an approach—to the satisfaction of the boards—that ensures third party verification of the capacity of organizations that they would rely on for responding to spills from offshore oil and gas facilities. In providing guidance to operators in undertaking this task, and in evaluating the acceptability of proposed approaches, the boards will consult with Transport Canada and the Canadian Coast Guard.

appropriate federal departments and agencies, and other organizations as necessary, to ensure that individual and collective response plans for a major oil spill are adequately resourced and coordinated, well defined, and regularly tested, individually and collectively. The plans should be supported by up-to-date and effective memoranda of understanding between all involved

parties. (1.73-1.83)

The boards should work with

The boards' response. Agreed. The boards are current in their involvement with the operators who, as first responders, are legally required to respond to any spill event.

The boards will continue to work with appropriate federal departments and agencies to ensure that the individual and collective response plans for responding to a major oil spill remain up to date. These plans will be supported by updated memoranda of understanding as appropriate.

The Nova Scotia Board will complete these actions prior to a future exploratory drilling program that may encounter oil (earliest expected date is 2015).

1.85 Natural Resources Canada, the Canadian Coast Guard, Transport Canada, and Environment Canada should work with the boards and others, as necessary, to establish and clarify the roles and responsibilities of federal government departments and agencies in the event of a major oil spill, as well as the resources that would be available. This should include a coordinated response plan. (1.78–1.83)

1.91 The boards should develop and maintain systematic practices for identifying and applying lessons learned from their own and other jurisdictions. They should integrate what they have learned with the boards' procedures for continuous improvement and with lessons learned processes in federal departments and agencies. (1.86–1.90)

Response

The departments' response. Agreed (by Natural Resources Canada, Canadian Coast Guard, Transport Canada, and Environment Canada). The roles and responsibilities of federal departments, agencies, and the boards in the event of a spill are established by various acts and regulations. The nature of a spill would determine the departments and agencies involved, as well as their level of engagement. In 2011, Natural Resources Canada and federal departments and agencies conducted two tabletop spill response exercises, and have continued to work together on a range of issues related to oil spills. The departments will work together and with the boards to review roles and responsibilities related to the response to a major oil spill. The review will take into consideration the legal authority, mandate, and available resources of each organization, and identify gaps, while acknowledging the primary role of the operator in spill response. In addition, Natural Resources Canada commits to hosting an annual simulation exercise with its partners.

The boards' response. Agreed. The boards currently have processes in place by which lessons learned from their own and other jurisdictions are applied. This was shown in the Macondo Deepwater Horizon event and by the Review of Offshore Oil-spill Prevention and Remediation Requirements and Practices in Newfoundland and Labrador, with departmental managers at both boards assessing the numerous reports and modifying board practices, where necessary. Internationally, many of these lessons learned are available to us through our charter member status in the International Regulators' Forum and the International Offshore Petroleum Environmental Regulators' Forum in which the Boards will continue their memberships. Additionally, the boards will continue to liaise with federal departments, agencies, and non-governmental organizations. The boards' internal practices and procedures will be strengthened by applying a systematic process to maintain their high standard.

Supporting key environmental decisions

assessment legislation, the boards should document or update their policies and procedures, and update their memoranda of understanding with their federal partners, including Environment Canada and Fisheries and Oceans Canada, to ensure that the boards will have the capacity for effective environmental review of projects not designated under the Canadian Environmental Assessment Act, 2012. (1.100–1.101)

Response

The boards' response. Agreed. The boards are undertaking a review of their processes for environmental assessment of projects not designated under the *Canadian Environmental* Assessment Act, 2012 (CEAA 2012) and will update their policies and procedures by the end of the first quarter of 2013 at the latest. In the interim, since the adoption of the CEAA 2012, the boards have been reviewing the potential environmental effects of proposed activities in a manner consistent with the previously existing *Canadian Environmental Assessment Act* (S.C. 1992, c. 37), and publishing the associated documents on their websites. The boards have already commenced the process of updating existing memoranda of understanding with Environment Canada and with Fisheries and Oceans Canada.

Environment Canada's response. Agreed. Environment Canada agrees to work with the boards to discuss their needs, determine what it could provide to address those needs, and reflect any formal agreement in an updated memorandum of understanding.

Fisheries and Oceans Canada's response. Agreed. Fisheries and Oceans Canada will continue to work collaboratively with the boards by providing expert advice on fish, fish habitat, fisheries, and aquatic species at risk for existing and forthcoming environmental reviews of projects as per our commitment in the memoranda of understanding. Over the long term, the Department will work with the boards to update the memoranda of understanding to clarify their roles and responsibilities in the light of the recent legislative change (Canadian Environmental Assessment Act, 2012).

1.104 Working with the boards and its other partners, Natural Resources Canada should assess the capacity of the boards to exercise their responsibilities, including how they rely on other federal parties, and should explore opportunities for sharing expertise among those responsible for offshore oil and gas activities. (1.93–1.101, 1.103)

Response

The Department's and boards' response. Agreed. Natural Resources Canada will work with the boards and the respective provincial governments to assess the capacity of the boards to exercise their responsibilities. The Department will establish a senior level committee to meet regularly to bring together the departments and agencies with responsibility and expertise related to offshore oil and gas activities to further coordination and knowledge sharing.

The boards are willing to be part of an ongoing discussion with relevant federal departments and agencies to ensure that the requirements for effective spill prevention and response and the sharing of expertise and coordination needed for effecting this are addressed on a continuous basis.



Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

A Study of Federal Support to the Fossil Fuel Sector

Environmental Petitions



Report of the Commissioner of the Environment and Sustainable Development

Financial Assurances for Environmental Risks







Report of the Commissioner of the Environment and Sustainable Development

Financial Assurances for Environmental Risks





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CHAPTER 2

Financial Assurances for Environmental Risks

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the Auditor General Act.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- report both positive and negative findings,
- conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Financial Assurances for Environmental Risks

Main Points

What we examined

Environmental financial assurances are an important mechanism the federal government uses to help shield taxpayers from the costs of environmental protection, cleanup, and reclamation for a range of natural resource development projects of the private and public sector, including mining, energy projects, the transport of oil and gas, and nuclear. Absolute liability limits are used in certain sectors to limit or cap the total amount that an operator may be liable for if an incident occurs, without proof of fault. Such absolute liability caps are used in Canada and in other countries.

Assurances can be in the form of letters of credit, trust funds, guarantees, and insurance. The federal government holds or has access to these assurances during the lifetime of a project.

The responsibility for natural resource development rests primarily with the provinces. However, there are several specific and well-defined federal regulatory responsibilities covering natural resource development, energy production, and transportation.

We examined whether selected federal entities have appropriate systems in place for obtaining and managing environmental financial assurances. Our audit focused on federal regulation of four sectors: mining (north of the 60th parallel), nuclear, offshore oil and gas, and marine transportation. We also examined liability limits established for nuclear facilities and oil spills from ships, as well as the liability regime for offshore oil and gas production, which includes both an absolute liability limit and an unlimited liability for parties at fault.

Audit work for this chapter was completed on 31 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

The environmental costs resulting from natural resource development projects can run into tens of millions—or in rare cases billions of dollars. Environmental financial assurances are an important safeguard, since they provide funds for future environmental liabilities to be paid for by a proponent or operator. They provide for liabilities arising from projects with long lifespans where risks associated with decommissioning and their related costs may not become known for decades. In conjunction with a regulatory framework, they can act as a powerful incentive to industry to reduce environmental impacts as a core part of business.

Environmental financial assurances are a tangible example of the "polluter-pays principle" in action, since the project proponent or operator is expected at the outset to cover all costs associated with environmental protection, site reclamation, longer-term protection of closed sites, and damages from accidents.

What we found

- Federal entities we examined have procedures in place for obtaining environmental financial assurances. Based on available information, we estimate that the assurances they have received give them access to approximately \$11.6 billion.
- Federal entities lack information to know if the assurances received are sufficient to cover the financial risks of projects, such as the cost of decommissioning and reclamation. We noted that Aboriginal Affairs and Northern Development Canada did not compare, on a regular basis, whether the financial securities obtained during the life of a mine are sufficient to meet the cost of reclamation of land and water. Fisheries and Oceans Canada was not able to confirm the total dollar value of the securities it held, whether the securities were still valid, or if they fully covered the estimated cost of fish habitat compensation plans.
- In two of the examined sectors—nuclear and offshore oil and gas liability limits for damages to third parties are outdated and generally much lower than those in other countries. Liability limits for damages to third parties from nuclear facilities have not changed in 35 years. Similarly, the offshore oil and gas liability limits have not changed in more than 20 years. In the marine transportation sector, Transport Canada acknowledges a risk that the current maritime liability limits and compensation regimes may not be sufficient to cover the cost of any major spill in Canadian waters. As a result, taxpayers may have to cover shortfalls and pay for environmental remediation.

• The Canadian Nuclear Safety Commission has obtained environmental financial assurances to cover the decommissioning costs of major nuclear sites. It is working to expand the requirement for such assurances to include licensees in the areas of medical and industrial applications and academic research.

The entities have responded. The entities agree with all of our recommendations. Their detailed responses follow the recommendations throughout the chapter.

,		

Introduction

- The resource sector is a significant part of the Canadian economy. In 2011, the extraction and processing of natural resources including oil and gas, and uranium, along with support activities to these sectors. contributed \$66 billion toward Canada's gross domestic product. The Responsible Resource Development plan announced by the government in 2012 stated that investment in resource development in Canada is expected to be \$650 billion over the next 10 years.
- Activities in the resource sector range from exploration and production to project decommissioning. Such activities are accompanied by various kinds and levels of environmental risk and. if not well managed, can result in a significant expense to the public purse. Environmental risks associated with such projects can include the release of toxic and hazardous substances; the impact of climate change on water and wastewater quality, flows, and containment controls; and effects on wildlife and fisheries.
- The impact of such events may require significant financial commitments or investments to decommission and ensure reclamation of a site or facility. As noted in our 2012 Spring Report, Chapter 3, Federal Contaminated Sites and Their Impacts, the cost to clean up federal contaminated sites exceeded \$7 billion. Since we reported, estimated costs have increased to over \$8 billion. The majority of these costs relate to addressing abandoned mines in the North, decommissioning nuclear facilities, and dealing with a legacy of low-level radioactive waste.
- 2.4 Government departments and regulatory bodies have a variety of tools to manage these risks, including
 - strategic environmental assessments,
 - environmental assessments of proposed projects,
 - laws and regulations to control the release of pollutants during operations, and
 - regulations for the decommissioning and reclamation of sites at the end of their operating lives.
- These tools also include environmental financial assurances and environmental liability limits (Exhibit 2.1). Environmental financial assurances are intended to protect public finances in case owners or operators become insolvent or fail to carry out their legal responsibilities related to the normal activities of their projects, including decommissioning and reclamation. Environmental financial

Decommission—To withdraw or dismantle equipment or facilities safely from service. Activities include removal and salvage of

Source: Adapted from Natural Resources Canada's Mining Information Kit for Aboriginal Communities

Reclamation—The process of restoring a site example, this can involve treatment or removal of contaminated soil and water as well as new

Source. Adapted from Natural Resources Canada's Mining Information Kit for Aboriginal Communities

assurances are securities that the regulatory body or government department hold and have access to in order to cover potential damages, if necessary. Environmental liability limits may limit the financial exposure of a project proponent. While such tools are available to the government, the basic onus is on operators to meet the costs associated with decommissioning, reclamation, and any damages resulting from accidents.

Exhibit 2.1 Key terms used in this chapter

Environmental financial assurances—Financial securities or guarantees such as letters of credit, trust funds, guarantees, or insurance. These are provided by project proponents to federal regulatory authorities to ensure that proponents meet the terms and conditions of a regulatory approval, including the decommissioning and reclamation of property at the end of the project.

Source: Adapted from International Council on Mining and Metals, 2005.

Proponent—A person or organization that has submitted, or plans to submit, a resource development or energy production proposal.

Environmental liability limits—Amounts that can be set in law limiting the financial exposure of a project proponent should there be an accident. In some cases, there are no limits to liability when operators are proven at fault or negligent. Certain statutes can impose absolute liability on a proponent without proof of fault or negligence up to a prescribed amount. Proponents are commonly required to carry insurance up to the prescribed absolute liability limit amount.

Source: Adapted from Canadian Institute of Chartered Accountants and Public Accounts of Canada,

In addition to environmental risks from everyday operations, risks can also include major environmental accidents costing billions of dollars for compensation, containment, and cleanup. Although rare, events such as the Fukushima Daiichi nuclear power plant accident in Japan in 2011, the Deepwater Horizon platform spill in the Gulf of Mexico in 2010, and the 2002 Prestige oil tanker spill off the Spanish coast all illustrate that the costs of containing and addressing such catastrophic accidents are significant (Exhibit 2.2).

Roles and responsibilities

While resource development is primarily a responsibility of provincial governments, various federal entities have regulatory responsibilities for resource development and energy production within Canada's North, on federal lands, and in Canada's offshore areas. Federal entities are responsible for regulating all stages of the nuclear fuel cycle, from uranium mining and milling through to

decommissioning and radioactive waste management. These entities include the following:

- Natural Resources Canada is responsible for recommending liability limits for nuclear facilities subject to the *Nuclear Liability Act* as well as the absolute liability component for offshore oil and gas.
- The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect the health, safety, and security of Canadians and the environment.
- Aboriginal Affairs and Northern Development Canada manages the resources, land, and environment of the North in places where federal responsibilities have not been transferred to territorial governments and Aboriginal peoples.

Exhibit 2.2 Examples of major resource disasters and their impact

Fukushima Daiichi nuclear power plant accident, Japan	Deepwater Horizon platform oil spill, Gulf of Mexico	Prestige oil tanker spill, Spanish coast	
Photo: DigitalGlobe Inc.	Photo: US Coast Guard	Photo: Associated Press	
Year: 2011	Year: 2010	Year: 2002	
Impact: Earthquake and resulting tsunami flooded and damaged four reactors. There was a major release of radioactive material and displacement of 160,000 people.	Impact: Eleven people died and an estimated 4.9 million barrels of oil were spilled.	Impact: An estimated 63,000 tonnes (462,000 barrels) of oil were spilled.	
Estimated range of costs: \$15 billion to	Estimated costs: More than \$40 billion US dollars	Estimated costs: \$1.4 billion US dollar	

- Fisheries and Oceans Canada has the lead federal role in managing Canada's fisheries and safeguarding its waters.
- Transport Canada has administrative responsibility for dealing with the liability of ship owners and operators in relation to passengers, cargo, pollution, and property damage.

Previous audit work

- In May 2012, we reported on federal contaminated sites and their impact. We found the federal government was responsible or had accepted responsibility for \$7.7 billion of environmental liabilities, with the majority of these related to resource development. In 2011, we reported on the transportation of dangerous products, looking at the activities of the National Energy Board's oversight of 71,000 kilometres of federally regulated oil and gas pipelines. The audit reported gaps in the Board's follow-up procedures for verifying whether operators have corrected deficiencies noted during monitoring and inspection. Also in 2011, we reported on enforcing the Canadian Environmental Protection Act, 1999. We found significant issues relating to Environment Canada's enforcement of the Act's associated regulations, including identifying risks and setting priorities. In 2010, we reported on oil spills from ships and found that there was no process in place to ensure that federal entities were ready to respond to an oil spill effectively.
- 2.9 In 2010, we also reported on sustaining development in the Northwest Territories and found that co-management boards were missing environmental information that could have been used in decisions relating to development proposals. The departments had not met their responsibilities to monitor the cumulative impact of development or various pollutants in the Northwest Territories, and significant departmental delays in providing agreed upon funding to First Nations hindered their participation in self-government negotiations.

Focus of the audit

- 2.10 We examined whether selected federal entities have established appropriate mechanisms to manage the financial implications of risks related to environmental damage. We looked at four sectors for which the federal government has responsibility:
 - · mining,
 - · nuclear facilities.

- · offshore oil and gas, and
- marine transportation (ship spills).
- 2.11 We focused on determining whether selected entities had systems for obtaining and managing environmental financial assurances that would minimize the financial impact on the public purse when a resource project is closed, comes to the end of its operating life, or suffers an environmentally damaging event. We also looked to see if liability limits established for these sectors were reviewed on a regular basis. The following federal entities were included in our audit:
 - Natural Resources Canada.
 - The Canadian Nuclear Safety Commission,
 - Aboriginal Affairs and Northern Development Canada,
 - Fisheries and Oceans Canada, and
 - Transport Canada.
- 2.12 Our audit work at Fisheries and Oceans Canada was conducted according to the terms of the Policy for the Management of Fish Habitat (hereinafter the Fish Habitat Policy), which requires compensation for damage or destruction of fish habitat. The *Jobs*, *Growth, and Long-term Prosperity Act* (Bill C-38), which received Royal Assent on 29 June 2012, made significant amendments to the *Fisheries Act*. These amendments include restricting the definition of fish habitat to focus only on the protection of fish that supports commercial, recreational, or Aboriginal fisheries. Some of the amendments to the *Fisheries Act*, which are expected to come into force in January 2013, require amendments to the current Fish Habitat Policy. The Department has stated that it has not yet fully determined the impact of the changes.
- **2.13** A separate audit has been completed of the two offshore petroleum boards and how they, in conjunction with other federal departments, manage environmental risks of offshore oil and gas activities (see Chapter 1 of this Report, Atlantic Offshore Oil and Gas Activities).
- **2.14** More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

2.15 As part of our audit, we examined the policies and procedures of selected entities for establishing and managing environmental financial assurances. A system for control and accountability should exist in federal entities governing environmental financial assurances. Such a system would include ways to determine the cost of decommissioning and reclaiming project sites. This would ensure that appropriate funds are available to regulatory bodies and that they are sufficient throughout the life of a project. Developing and implementing such policies and procedures is important for managing risks, safeguarding the environment, and protecting the public purse.

2.16 Our detailed findings for each of the sectors reviewed are set out in separate sections.

Mining sector

Aboriginal Affairs and Northern Development Canada has obtained environmental financial assurances

2.17 A regulatory framework and the environmental financial assurances established according to regulations are used to manage environmental risks of mining activities. These financial assurances provide a contingency fund to cover the costs associated with mine decommissioning and reclamation. The extent of the reclamation that needs to be carried out will affect the cost of the work and the amount of financial assurance required. For instance, full ecological land reclamation would likely be significantly more expensive than simply containing mine waste in tailings ponds and would accordingly require higher financial assurances.

2.18 We looked to see if mechanisms (policies, procedures, and practices) were in place to identify, assess, and mitigate the financial impact on the federal government of environmental damage from the development, operation, and closure of mines north of the 60th parallel, where the federal government has either joint or exclusive jurisdictional responsibility. We also examined whether mechanisms were in place to minimize the financial impact on the government of unforeseen events (accidents) at these mines.

2.19 The Minerals and Metal Policy of Canada, introduced in 1996 and administered by Natural Resources Canada, requires the government to ensure that, as a condition for mine development on federal lands, mine operators develop comprehensive plans for the reclamation of disturbed areas. These plans are to include the provision of satisfactory financial assurances to cover costs of

Tailings ponds Large earthen structures above ground or in former mine pits used to contain mining wastes called tailings. Water bodies can also be used to store tailings Tailings are a mixture of finely ground rock particles water and processing leagents that remain after processing Tailings ponds contain effluents and potential heavy metal by-products of mining processing.

Tue: Allo, Lis, from Nat. 15 Res. Tres Conada fact sher the control of A.S. Lot of Petroleon Froducers "Polluter-pays principle"—A generally accepted principle according to which the polluter should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution.

Source United Nations, Glossary of Environmen Statistics, 1997 reclamation and, where necessary, long-term maintenance. This policy endorses the concept of pollution prevention and recognizes the "polluter-pays principle" under which operators have the responsibility for environmental performance and for stewardship of minerals and metals.

- 2.20 The federal government is the landowner of more than 80 percent of the land in the Northwest Territories and Nunavut. Aboriginal Affairs and Northern Development Canada (AANDC) would become responsible for any environmental costs on federal lands that are not properly secured by financial assurances if a resource development operator does not or cannot honour its legal commitments to restore the environment, including reclamation of its site.
- 2.21 The legislation and land claim agreements that created the various land and water boards in the North gave these boards the authority to recommend, and approve in certain situations, the amount of financial assurances to be held in support of water licences and land-use permits for resource development activities licensed within their jurisdictions. The Minister of Aboriginal Affairs and Northern Development must approve most licences issued by the Boards. The financial assurances obtained for mines and other natural resource developments in northern Canada are to cover the costs of decommissioning and site reclamation. We found that AANDC had procedures in place for obtaining environmental financial assurances when a proponent for a development project seeks a licence or permit. The Department holds about \$500 million in securities to cover these costs.
- 2.22 We noted that, in an effort to ensure that financial security requirements are applied consistently, the Department developed a standardized model to calculate mine reclamation costs using standard costs. Reclaiming a site involves removing or stabilizing mine structures, tailings ponds, and drainage systems as well as disposing of waste rock and replanting or rebuilding disturbed land. The model stipulates that reclamation costs are based on independent third parties completing the reclamation work on the site. In addition to calculations provided by this model, the Department may consider other factors when setting the final security amount, such as the economic and financial stability of a proponent, past history of the proponent, and potential benefits to the region.

There are weaknesses in the Department's management of environmental financial assurances

- 2.23 Sound management of environmental financial assurances requires key information, such as the term of the operator's licence or permit, the required amount of financial security, the form of the security, and the security's expiry date. Such information is essential for monitoring the continuing adequacy of the environmental financial assurance in place. Without such information, the Department will not know if the financial securities held are sufficient to cover the full cost of decommissioning the facility and restoring the site.
- 2.24 We found that inventory records at AANDC did not include all information necessary for management to ensure that environmental financial assurances received for a project were sufficient for its level of risk. For example, inventory records showed financial securities by licence or permit number but not by project (such as a mine), making it difficult to ensure that the amount of a security was sufficient for activities throughout a project's duration. There was no indication of the reclamation costs that securities were supposed to cover, or whether a security that was expired had been returned or replaced. Such information is needed to monitor whether operators are adhering to terms and conditions of authorizations and whether the financial assurances the Department holds are still sufficient.
- 2.25 We also found that the Department does not compare, on a regular basis, whether the financial securities obtained during the life of the mine for each authorized licence are sufficient to meet the cost for reclamation of land and water. For example, 3 of the 11 mines in Nunavut had security shortfalls totalling almost \$11 million. A security shortfall is the difference between the reported value of the security held and total value of the security required for the proponent to continue to meet the terms and conditions of the licences for these mines. Regular assessments of securities are an important component of sound management, because they ensure that the securities held are sufficient to reclaim sites as the financial implications may vary over time.
- 2.26 Inspections are an important step in the process to ensure that financial assurances held are sufficient. Inspections are a condition for obtaining a licence or permit to ensure that their terms are being adhered to—for example, that fuel is being properly stored, tailings ponds are structurally sound, and hazardous wastes are being properly disposed of. We found that in 2011, over 70 percent of required site visits of all resource development projects (including mines) were

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not conducted by the Department in the Northwest Territories.

Departmental records indicate that members of the Department's staff raised concerns internally about the level of monitoring being done.

- 2.27 Legislation and regulations specify the type of security instruments that can be accepted. Departmental policies also require that the securities obtained must be cashable and maintain their value in the event of an operator's insolvency. In the case of one mine, the Department accepted \$17.6 million in promissory notes for reclamation costs. These promissory notes did not satisfy legislative and regulatory requirements, because they were not guaranteed by a bank in Canada. The Department was unable to provide us with evidence that the Minister considered these notes to be a satisfactory security. We have concerns about the continuing enforceability of this security.
- **2.28** The *Territorial Land Use Regulations* were developed in 1971 and limit securities in support of land-use permits to a maximum of \$100,000. This limit does not reflect current costs for reclaiming a site.
- 2.29 At the time we were completing our audit work, Aboriginal Affairs and Northern Development Canada was developing a policy to govern the manner in which it manages the securities it holds as environmental financial assurances.
- 2.30 We also examined whether there were provisions in place to minimize the financial impact on the government of unforeseen events (accidents) at mines north of the 60th parallel. We found that liability for the impact on human health and the environmental damage resulting from an accident is managed on the "polluter-pays principle"—the owner or operator is expected to cover the costs of all damages and reclaim the environment. While there is no requirement for the owner or operator to have insurance, legislation allows the Department to access securities it holds to address accidents. In such circumstances, an operator would be expected to fully replenish these funds. In the event that the funds on hand are not sufficient to restore a site on federal lands, there is a risk that the government would have to assume these financial implications.
- 2.31 Recommendation. Aboriginal Affairs and Northern Development Canada should carry out the required monitoring and inspection programs to ensure that proponents are adhering to the terms of their licences and permits and that the financial assurances obtained remain adequate. The Department should develop a comprehensive inventory system that provides consistent information

by project and by regulatory authority of all securities required and held to ensure that the securities continue to meet the expected reclamation costs.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department will implement a risk assessment framework and risk management strategy for inspections, to optimize resources available for inspections, adjust securities as required to reduce the liability of the Department, and ensure that appropriate securities are maintained at all times.

Fisheries and Oceans Canada has obtained environmental financial assurances

- 2.32 As part of our audit, we reviewed practices and procedures established by Fisheries and Oceans Canada (DFO). According to the Department's Policy on the Management of Fish Habitat (hereinafter referred to as the Fish Habitat Policy), the Department may require compensation from a project proponent to offset damage or destruction of fish habitat caused by the project.
- 2.33 Under the Fisheries Act, the Minister of Fisheries and Oceans may authorize the harmful alteration, disruption, or destruction of fish habitat that may result from works or activities taking place in and around fish-bearing waters. Financial assurances may be obtained to ensure that the proponents fulfill their legal obligations under terms of the authorizations. These obligations are set out in a site-specific fish habitat compensation plan.
- 2.34 Under the *Fisheries Act* and the Fish Habitat Policy, the Department is not obliged to obtain financial assurances from proponents who must create compensating fish habitat under their departmental authorizations. When DFO decides to obtain a financial assurance, it generally requires that proponents provide letters of credit as security, because these are issued by financial institutions and are readily cashable. While the Department has established national guidance for its staff on how to obtain and manage these financial assurances, we noted that each regional office has its own system and provided limited information to the national headquarters.

There are weaknesses in the Department's management of environmental financial assurances

2.35 We noted that in 2008 the Department implemented a system—the Program Activity Tracking for Habitat (PATH)—to capture information on securities held. However, key information is not being captured in this database, such as information on securities obtained

by the Department prior to 2008, the estimated compensation costs, the value and type of security held, and the expiry date of these securities. According to the PATH database, DFO obtained approximately \$122 million in support of habitat compensation plans between November 2008 and August 2012. Since this figure does not include environmental financial assurances obtained prior to November 2008, DFO was not able to confirm the total dollar value of the securities it held, whether the securities were still valid, or if they fully covered the estimated costs of the compensation plans.

- **2.36** The Jobs, Growth and Long-term Prosperity Act (Bill C-38), which received Royal Assent on 29 June 2012, significantly amended the Fisheries Act. Some of these amendments, including those affecting the Fish Habitat Policy, are expected to come into effect only in January 2013. It is expected that at that time, the new fisheries protection provisions will come into effect, requiring a new policy to be put in place. Department officials told us that DFO has not yet fully determined the impact of these amendments coming into force or the impact of the policy changes. Once implemented, certain amendments will eliminate fish habitat protection for fish-bearing waters that do not directly support a commercial, recreational, or Aboriginal fishery.
- 2.37 The Department has not yet determined how many of the fish habitat compensation plans and supporting financial assurances it holds will no longer be required. In addition, it does not know how these amendments will affect the management of environmental financial assurances in the future.
- **2.38** Recommendation. Fisheries and Oceans Canada should determine the effects of program change on the environmental financial assurances it holds or is expecting to obtain. The Department should strengthen its monitoring and tracking of such assurances to provide consistent information on all securities required and held.

Fisheries and Oceans Canada's response. Agreed. The Department will complete a review of all authorizations issued pursuant to section 35(2) of the *Fisheries Act* for ongoing works, undertakings, or activities in order to determine if the authorization remains necessary and which conditions of the authorization (including financial securities) may remain relevant. Fisheries and Oceans Canada will also effect changes to the Program Activity Tracking for Habitat (PATH) system to enable the collection, consolidation, monitoring, and tracking of information relating to financial assurances required or held. Implementation date: 1 April 2014.

Nuclear facilities sector

Environmental financial assurances are in place for major nuclear facilities

- 2.39 Under the Nuclear Safety and Control Act, the Canadian Nuclear Safety Commission (CNSC) may require that proponents provide a financial guarantee as a term or condition of the licence granted to them to operate facilities. We examined whether such guarantees were in place.
- 2.40 We found that the CNSC requires that major nuclear sites, including nuclear power plants, research reactors, and operating uranium mines and mills, have financial assurances in place intended to cover the decommissioning costs of their facilities. This requirement has resulted in financial guarantees for about 71 licences. The value of a financial guarantee is tied to the cost of decommissioning the site as outlined in the decommissioning plans submitted by the proponent and approved by the Commission. Approximately \$11 billion in letters of credit and trust funds have been provided by these proponents to cover the estimated cost of eventual decommissioning of the nuclear facilities or sites.
- 2.41 Under the terms of their licences, proponents are required to submit updated decommissioning plans and financial guarantees, generally every five years. Within the five-year period, operators of certain nuclear power plants report annually to the CNSC on the sufficiency and adequacy of the financial guarantee relative to the estimated decommissioning costs. These plans are reviewed by CNSC staff and must be approved by the Commission.
- 2.42 To date, the CNSC has not required financial guarantees from the operators of prescribed equipment. The Commission has issued approximately 2,500 licences to these operators. It began a process in March 2011 to establish a financial guarantee requirement for this group of licensees. Financial guarantees are being obtained to provide securities that CNSC can access, if necessary, to clean up contamination or environmental damage caused by a licensee. The target completion date is March 2013.
- 2.43 The Nuclear Safety and Control Act, along with the General Nuclear Safety and Control Regulations, provides the authority through which the CNSC obtains financial assurances. The Commission also has regulatory guides. We found that it had not developed internal operational processes for establishing and managing financial assurances. The Commission has indicated that it intends to create formal policies and operational guidance for managing financial assurances. These policies will include a requirement for a consolidated

Prescribed equipment -Includes equipment

inventory of all financial guarantees and corresponding liabilities. These measures are important, given the CNSC's plans to obtain financial assurances from the operators of prescribed equipment.

2.44 Recommendation. The Canadian Nuclear Safety Commission should formalize its internal practices and procedures for establishing and managing environmental financial assurances. These procedures should include guidance to ensure their consistent application and to ensure the development and maintenance of a comprehensive inventory of the financial assurances that are in place.

The Canadian Nuclear Safety Commission's response. Agreed. The Commission will formalize the practices and procedures for establishing and managing environmental financial assurances. The process is planned to be completed and implemented by 31 March 2013. CNSC management will monitor the process to ensure its proper implementation.

Canada's absolute liability limit for nuclear operators has not changed in 35 years and is much lower than those in most other countries

- 2.45 As part of our audit, we compared the absolute liability limit and corresponding insurance required from nuclear operators in Canada with the liability limits and compensation requirements in other countries. We noted that Natural Resources Canada had also undertaken such a comparison. An analysis of both comparisons indicated that other jurisdictions have significantly higher absolute liability limits and compensation requirements than Canada (Exhibit 2.3).
- 2.46 The *Nuclear Liability Act* establishes Canada's system for damages resulting from the unlikely event of a nuclear incident. Operators have absolute liability up to a maximum of \$75 million per event. Canadian operators obtain insurance from the Nuclear Insurance Association of Canada to cover their absolute liability. This insurance provides coverage for third-party compensation for personal injury and property damages. There is no provision for environmental damages or environmental restoration of **the commons**. In Japan, where operator liability is unlimited, nuclear power plant operators are now required to carry insurance in the amount of \$1.5 billion.
- 2.47 The nuclear liability limit in Canada remains unchanged since 1976, when the Act came into force. In June 2007, Bill C-63, the *Nuclear Liability and Compensation Act*, was introduced in Parliament. Bill C-63 did not proceed. Similar versions of the bill were introduced in subsequent Parliaments, but none have proceeded.

The commons—Resources that belong to or are shared by a community. This includes natural systems such as soil, forests, air, and water.

Millions (CAN\$)

Spain

Canada

Noway

Noway

Noway

Noway

Nowed

Exhibit 2.3 Canada's absolute nuclear liability limit and compensation amount is significantly lower than limits in most other countries

Note: In most cases, additional levels of compensation are made up of public funds. Only in the cases of the US, Japan, Switzerland, and Germany are they funded by operators.

Source: Adapted from Natural Resources Canada

- 2.48 The key changes proposed in the last bill introduced to amend the *Nuclear Liability Act* were intended to
 - increase the amount of operator absolute liability from \$75 million to \$650 million;
 - require that the operator liability limit be reviewed on a regular basis, and at least once every five years;
 - expand the categories of compensable damage to address environmental damage, economic loss, and costs related to preventive measures; and
 - expand the limitation period for submitting compensation claims for bodily injury to 30 years versus the current 10 years.
- 2.49 In May 2012, Natural Resources Canada issued a consultation paper to obtain written comments from the nuclear industry and the governments of nuclear power—generating provinces on issues related to the modernization of Canada's nuclear civil liability legislation. These issues included the sufficiency of the previously proposed \$650 million liability limit, taking into consideration recent developments, such as other jurisdictions increasing or planning to increase operator liability limits to about \$925 million or higher.

2.50 Recommendation. Natural Resources Canada should complete its review of liability limits for nuclear activities subject to the *Nuclear Liability Act* and, as necessary, recommend increases to them.

Natural Resources Canada's response. Agreed. The Department will complete its review of liability limits as a matter of priority and recommend changes as necessary.

Offshore oil and gas sector

Offshore oil and gas absolute liability limits are dated

- 2.51 As part of our audit, we examined the liability regime applicable to offshore oil and gas and how it compared to those of other countries. We looked to see whether there was an absolute liability component to the liability framework for damages to third parties, and, if established, whether it had been reviewed or updated since its inception.
- 2.52 Regulations pursuant to the Canada Oil and Gas Operations Act and the Arctic Waters Pollution Prevention Act establish for the Arctic offshore area a \$40 million absolute or "no fault" liability limit for actual loss and damage and reasonable clean-up costs. The Accord Acts establish for the Atlantic offshore oil and gas operations a \$30 million absolute liability limit for the same damages and costs. Proponents are required to provide financial securities to the respective regulators up to the amount of their "absolute liability." If damages exceed the absolute liability limits, then all parties responsible for an oil or gas spill in Canada's offshore areas are subject to unlimited liability if found to be at fault or negligent.
- 2.53 We noted that the absolute liability limits have not changed in more than 24 years and are low compared with the limits in other countries. As shown in Exhibit 2.4, the liability limit in the United States is US\$75 million (CAN\$74.9 million), the United Kingdom has increased its absolute liability limit to US\$250 million (CAN\$249.8 million) per incident, and Norway has an unlimited absolute liability limit. Greenland has a US\$1 billion (CAN\$999 million) insurance requirement for offshore oil exploration and unlimited absolute liability for oil drilling.
- 2.54 We noted that early in 2011, Natural Resources Canada began a review of the liability regime applicable to Canada's offshore oil and gas activities. Various internal papers and studies have been prepared to assess, among other things, how adequate the limit is for the absolute liability component of the regime. This work considers possible changes to the absolute liability limit, principles, and policy implications, and the impact of those changes.

Accord Acts — The Canada—Newfoundland Atlantic Accord Implementation Act and the Canada - Nova Scotia Offshore Petroleum Resources Accord Implementation Act. The associated provincial laws are the Canada—Newfoundland and Labrador Atlantic Accord Implementation (Newfoundland and Labrador) Act and the Canada—Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act



Oil platform off Canada's east coast.



Exhibit 2.4 Canada's offshore oil and gas absolute liability regime compared with other countries

Notes: 1. Operators are liable for damages in excess of liability limits in situations such as proven negligence or fault.

2. Liability limits were converted from US dollars to Canadian dollars as of 30 March 2012.

2.55 Recommendation. Natural Resources Canada should complete its review of absolute liability limits for offshore oil and gas activities and recommend the revision of these limits, as necessary, to reflect the nature and significance of the potential risks.

Natural Resources Canada's response. Agreed. The Department will complete its review of the offshore oil and gas liability regime, including the regime's absolute liability component, as a matter of priority. The Department will work with its federal and provincial partners and recommend changes as necessary.

Marine transportation sector

Transport Canada has not updated its maritime transport risk assessment

2.56 Tanker oil spills have decreased over the last two decades and are rare as a result of improvements in safety standards, modern navigation equipment, and improved tanker construction practices such as double hulls. While rare, tanker spills can result in extensive long-term marine damage and costly clean-up efforts. For example, in 2002 the Prestige tanker spilled 63,200 tonnes of oil off the coast of Spain. Claims for damages were about \$1.4 billion.

2.57 The environmental impact and cost of a spill depends not only on how much oil is spilled, but also on where the spill takes place and what type of oil is spilled. A small amount of oil spilled along an environmentally sensitive coast can be more devastating than a larger spill far out at sea.

- 2.58 Transport Canada administers the *Marine Liability Act*, which governs civil liability for maritime claims in Canadian waters. The Act incorporates Canada's international commitments and provides for various levels of liability, depending on the type of oil that is causing pollution damage and the type of ship involved in an accident. Canada manages its exposure to the financial impact of marine spills through a four-tiered system that combines ship-owner insurance, domestic funds, and international conventions and protocols (Exhibit 2.5). We noted that this system provides for both third-party damages and environmental damages.
- **2.59** We looked to see if Transport Canada was monitoring and assessing the adequacy of maritime liability limits.
- **2.60** Canada is a signatory to several international conventions and protocols, one of which relates to ship-owner insurance, for pollution caused by oil transported by sea. As outlined in Exhibit 2.5, the compensation system for tanker oil features three International Maritime Organization conventions and protocols and one domestic fund. In addition to the international protocols, Canada has established its own Ship-source Oil Pollution Fund.

Exhibit 2.5 Canada is party to a four-tiered system for maritime liability for oil tanker spills to a maximum of \$1.3 billion per incident

Tier	Conventions and funds related to tanker oil spills	Total maximum compensation per incident as of 1 April 2012 (CAN\$ millions)
1	Ship-owner insurance. The International Convention on Civil Liability for Oil Pollution Damage—ship-owner liability limit supported by compulsory insurance.	\$138 (10.5%)
2	International Convention. The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992—International Compensation Fund.	\$174 (13.3%)
3	International Protocol. The Supplementary Fund Protocol of 2003 to the 1992 International Oil Pollution Compensation Fund.	\$840 (64%)
4	Canada's Domestic Fund. Canada's domestic Ship-source Oil Pollution Fund, 1989 (SOPF).	\$160 (12.2%)
tal ma	ximum liability limit per spill incident	\$1,312 (100%)

Source: 2011–12 annual reports of the Ship-source Oil Pollution Fund and International Oil Pollution Compensation Funds

- We found that Transport Canada was active in monitoring and participating in the maritime liability and compensation system. For example, in April 2012, the Canadian delegation to the International Maritime Organization Legal Committee, 99th session, played a part in having liability limits for bunker oil increased by 52 percent—the first increase in 15 years.
- 2.62 As reported in Chapter 1 of our 2010 Fall Report, Oil Spills from Ships, Transport Canada reviews private sector certified response organizations to ensure that they have up-to-date management plans, conduct training, and have the equipment necessary to respond to ship-source oil spills up to 10,000 tonnes within 72 hours. The audit also found that while risks had been assessed, approaches were not consistent, and there were no formal processes for ensuring that risks would be reassessed on an ongoing basis. Since spill risk factors can change over time, the audit recommended that Transport Canada and the Canadian Coast Guard conduct a risk assessment related to shipsource oil spills covering Canada's three coasts.
- We were informed by Transport Canada that planned risk assessments, which were to be completed in 2012, were deferred until 2013. Transport Canada data indicates that in 2010, about 91 million tonnes of petroleum products were either imported or shipped off Canada's east and west coasts. These shipments consisted of about 3,600 tanker movements in Canadian waters in 2010, about 600 of which were off the west coast and about 3,000 off the east coast.
- 2.64 The maritime transportation risk environment continues to change. Natural Resources Canada is projecting that based on current proposals, there could be almost 1,800 more tanker movements on the west coast to handle increased liquid natural gas and crude oil exports and imports, representing a significant increase over current shipment levels. The proposed tankers to be used and their respective carrying capacities, in deadweight tonnage (DWT), are shown in Exhibit 2.6. These include Suez-Max (120,000 to 200,000 DWT) and very large crude carriers (VLCC) (200,000 to 320,000 DWT). These tankers have a capacity significantly greater than the 10,000 tonne oil spill response capacity, within 72 hours, mandated by Transport Canada for ship-based oil spills in Canadian waters.

Deadweight tonnage (DWT) - The mass that a water, and everything required for proper

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2.65 Transport Canada acknowledges there is a risk that present maritime liability limits and compensation regimes may not be sufficient in the wake of a major spill from a vessel in Canadian waters. Transport Canada informed us that it continues to monitor developments, including the government's projections regarding the increase in tanker traffic on Canada's west coast.

Handysize (193 m)

40,000 DWT

Aframax (220 m)

81,000 DWT

2.66 Recommendation. Transport Canada should carry out a comprehensive risk review of the maritime transportation liability and compensation system. The review should take into consideration the limited ship-based oil spill response capacities and the projected increase in tanker size and traffic transporting environmentally harmful substances in Canadian waters.

Transport Canada's response. Agreed. The Department will conduct a comprehensive review of the liability and compensation regime associated with marine transportation based on a risk assessment to be completed by fall 2013.

Conclusion

- 2.67 We concluded that the federal entities we examined have established appropriate systems to obtain financial securities that may be accessed by the government should a project proponent or operator become insolvent or fail to meet its obligations for protecting the environment under the terms of the authorizations provided to them. However, there are areas for improvement. Each of the organizations included in our audit was missing important elements for the ongoing management of environmental financial assurances. Examples included incomplete information on inventories of environmental financial assurances and the securities they held, a lack of documented policies and procedures, and a need for an updated assessment of risks.
- 2.68 Canada's absolute liability limits established for nuclear facilities and offshore oil and gas development have not been updated since their inception. As a result, taxpayers may be at increased risk of paying for environmental damage from a nuclear accident, or an oil spill due to oil and gas activity for which no party is found to be at fault or negligent. In both cases, the liability limits are lower than those of other countries.

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About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of the audit was to determine whether federal entities have appropriate systems in place to manage the risks of financial impact of environmental damages. The focus was on determining whether selected entities had systems for obtaining and managing environmental financial assurances that would reflect risks and minimize cost, including whether liability limits were sufficient.

The word "systems" means the structures, policies, processes, procedures, mechanisms, and information for achieving control and accountability. By environmental damage we mean actual or potential damage to the environment caused by government or industrial activity, including adverse impact on land, water, and ecosystems.

Scope and approach

We examined the following entities in the audit:

- · Natural Resources Canada,
- The Canadian Nuclear Safety Commission,
- Aboriginal Affairs and Northern Development Canada,
- · Fisheries and Oceans Canada, and
- Transport Canada.

Criteria

Criteria	Sources		
· · · · · · · · · · · · · · · · · · ·	opropriate systems in place to manage the risks of damages, we used the following criteria:		
Federal entities have processes and procedures in place to identify, assess, and mitigate the financial impact of environmental damages.	 Financial Administration Act Canadian Environmental Assessment Act Framework for the Management of Risk, Treasury Board, 2010 Canadian Environmental Protection Act, 1999 Financial Administration Act 		
Federal entities have risk management procedures in place, including initiation, preliminary analysis, risk estimation, risk evaluation, risk control and mitigation, and action and monitoring.	 Canadian Environmental Assessment Act Framework for the Management of Risk, Treasury Board, 2010 Risk Management: Guideline for Decision Makers, Canadistandards Association, 2009 Policy Framework for Financial Management, Treasury Board, 2010 Enterprise Risk Management and Internal Control Frameworks, Committee of Sponsoring Organizations of 		

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between 1 April 2007 and 31 March 2012. Audit work was completed on 31 August 2012.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the Chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

Response

Mining sector

2.31 Aboriginal Affairs and Northern Development Canada should carry out the required monitoring and inspection programs to ensure that proponents are adhering to the terms of their licences and permits and that the financial assurances obtained remain adequate. The Department should develop a comprehensive inventory system that provides consistent information by project and by regulatory authority of all securities required and held to ensure that the securities continue to meet the expected reclamation costs. (2,23–2,30)

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department will implement a risk assessment framework and risk management strategy for inspections, to optimize resources available for inspections, adjust securities as required to reduce the liability of the Department, and ensure that appropriate securities are maintained at all times

2.38 Fisheries and Oceans Canada should determine the effects of program change on the environmental financial assurances it holds or is expecting to obtain. The Department should strengthen its monitoring and tracking of such assurances to provide consistent information on all securities required and held. (2.35–2.37)

Fisheries and Oceans Canada's response. Agreed.

The Department will complete a review of all authorizations issued pursuant to section 35(2) of the Fisheries Act for ongoing works, undertakings, or activities in order to determine if the authorization remains necessary and which conditions of the authorization (including financial securities) may remain relevant. Fisheries and Oceans Canada will also effect changes to the Program Activity Tracking for Habitat (PATH) system to enable the collection, consolidation, monitoring, and tracking of information relating to financial assurances required or held. Implementation date: 1 April 2014.

Recommendation

Response

Nuclear facilities sector

2.44 The Canadian Nuclear Safety Commission should formalize its internal practices and procedures for establishing and managing environmental financial assurances. These procedures should include guidance to ensure their consistent application and to ensure the development and maintenance of a comprehensive inventory of the financial assurances that are in place. (2.39–2.43)

The Canadian Nuclear Safety Commission's response. Agreed. The Commission will formalize the practices and procedures for establishing and managing environmental financial assurances. The process is planned to be completed and implemented by 31 March 2013. CNSC management will monitor the process to ensure its proper implementation.

2.50 Natural Resources Canada should complete its review of liability limits for nuclear activities subject to the *Nuclear Liability Act* and, as necessary, recommend increases to them. (2.45–2.49)

Natural Resources Canada's response. Agreed.

The Department will complete its review of liability limits as a matter of priority and recommend changes as necessary.

Offshore oil and gas sector

2.55 Natural Resources Canada should complete its review of absolute liability limits for offshore oil and gas activities and recommend the revision of these limits, as necessary, to reflect the nature and significance of the potential risks. (2.51–2.54)

Natural Resources Canada's response. Agreed.

The Department will complete its review of the offshore oil and gas liability regime, including the regime's absolute liability component, as a matter of priority. The Department will work with its federal and provincial partners and recommend changes as necessary.

Marine transportation sector

2.66 Transport Canada should carry out a comprehensive risk review of the maritime transportation liability and compensation system. The review should take into consideration the limited ship-based oil spill response capacities and the projected increase in tanker size and traffic transporting environmentally harmful substances in Canadian waters. (2.56–2.65)

Transport Canada's response. Agreed. The Department will conduct a comprehensive review of the liability and compensation regime associated with marine transportation based on a risk assessment to be completed by fall 2013.







Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

A Study of Federal Support to the Fossil Fuel Sector

Environmental Petitions





Report of the Commissioner of the Environment and Sustainable Development

Marine Protected Areas





Report of the Commissioner of the Environment and Sustainable Development

Marine Protected Areas





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CHAPTER 3

Marine Protected Areas

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the Auditor General Act.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- · report both positive and negative findings,
- · conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Marine Protected Areas

Main Points

What we examined

Marine protected areas (MPAs) are a key tool that Canada has committed to using to protect and conserve marine biodiversity. As a signatory to the United Nations Convention on Biological Diversity. Canada agreed to an international target of conserving 10 percent of marine areas by 2020 through networks of protected areas and other conservation measures. A network of marine protected areas is a collection of individual marine protected areas that operates cooperatively in order to fulfill ecological aims more effectively and comprehensively than individual sites could do alone.

Fisheries and Oceans Canada, Parks Canada, and Environment Canada are the three federal authorities with specific, complementary mandates to establish and manage marine protected areas in Canada's oceans and Great Lakes. Fisheries and Oceans Canada is responsible for leading and coordinating the development and implementation of a national network of MPAs on behalf of the Government of Canada and also has a mandate to establish individual marine protected areas. Parks Canada is responsible for establishing marine protected areas to protect and conserve representative examples of Canada's natural and cultural marine heritage, to provide opportunities for public education and enjoyment, and to contribute to a national network of marine protected areas. Environment Canada is responsible for protecting habitat for a variety of wildlife, including migratory birds and species at risk.

We examined actions taken by Fisheries and Oceans Canada and Parks Canada to plan, establish, and manage marine protected areas.

Audit work for this chapter was completed on 28 August 2012. More details on the conduct of the audit are in About the Audit at the end of this chapter.

Why it's important

The world's oceans are under threat from the effects of pollution and over-exploitation. According to Fisheries and Oceans Canada, in 2009 the quantity of Canada's fishery catches was 41 percent less than the peak harvest volumes of the late 1980s; the 2009 landed values were among the lowest on record since 1984.

Conserving and protecting marine biodiversity is not solely an environmental priority. As recently reported at the 2012 World Economic Forum, the ocean's natural capital (the stock of ecological goods and services that can be maintained for use in the future) is intrinsic to the health and functioning of the world economy. Today, more than 1.5 billion people count on fish for their daily protein source. With the world population projected to reach 9 billion by 2050, humankind needs to double the production of food without further depleting Earth's natural capital.

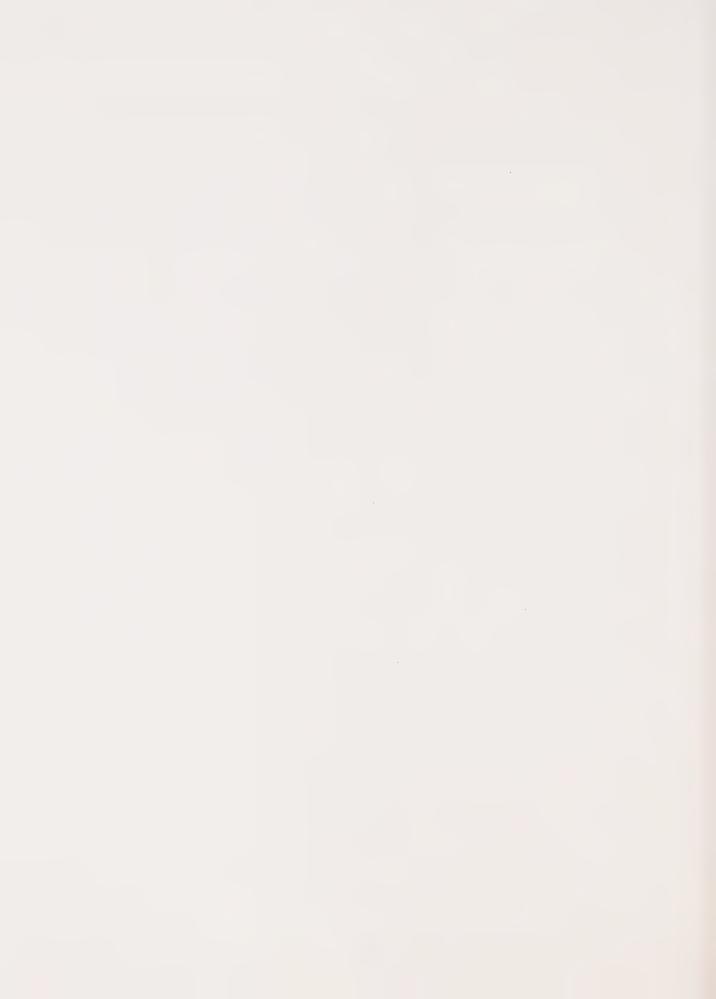
In concert with other ocean management initiatives, the benefits of marine protected area networks include protecting species and ecosystems, protecting unique and threatened species, capturing and storing carbon, and providing refuge for species displaced by habitat change. MPA networks can also provide social and economic benefits, such as sustained fisheries, and enhanced recreation and research opportunities.

What we found

- Fisheries and Oceans Canada has established eight MPAs, led the development of the 2011 National Framework for Canada's Network of Marine Protected Areas, and is now developing technical guidance for implementing the Framework. However, the Department has not coordinated with other authorities and stakeholders to produce a plan for a network of marine protected areas as called for by the *Oceans Act* (in force in 1997). The Department has not identified the specific areas that need to be protected by it and others to create a national network that would conserve and protect Canada's marine habitats, animals, and plants.
- Parks Canada has made substantial progress toward its plan for establishing MPAs that would be representative of Canada's marine environments. The Agency has defined 29 marine regions in Canada, identified representative areas within 28 of those regions, decided on MPA candidate sites within 14 regions, and established two MPAs in legislation. However, significant work remains to be done. Parks Canada needs to select candidate sites for MPAs in 15 of its marine regions, and establish MPAs in the 26 of 29 regions where they have yet to be established. Although it has not set a timeline for doing so, the Agency plans to have MPAs in each of its 29 defined marine regions—these MPAs will be the Agency's contribution to Canada's MPA network.

• Both Fisheries and Oceans Canada and Parks Canada have recognized through their commitments within the Federal Sustainable Development Strategy that concrete actions are needed to complete this work, but they have not met these commitments. It has been 20 years since Canada ratified the United Nations Convention on Biological Diversity and 15 years since it committed to leading and coordinating the development and implementation of a national network of marine protected areas under the *Oceans Act*. Yet there is no national network of marine protected areas. Fisheries and Oceans Canada estimates that marine protected areas currently cover about 1 percent of Canada's marine environment. At the current rate of progress, it will take many decades for Canada to establish a fully functioning MPA network and achieve the target established in 2010 to conserve 10 percent of marine areas under the United Nations Convention on Biological Diversity.

The entities have responded. The entities agree with all of the recommendations. Their detailed responses follow the recommendations throughout the chapter.



Biodiversity—The variability among living organisms from all sources, including, among others, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, among species, and of ecosystems.

Source Adapted from the United Nations Convention o Biological Diversity

Marine protected area—"A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means to achieve the long-term conservation of nature with associated ecosystem services and cultural values."

Source International Union for the Conservation of Nature

Ecosystem services—Humankind benefits from a variety of renewable resources and processes that are supplied by natural ecosystems. Collectively known as ecosystem services, they include provisioning services, such as food and drinking water; regulating services, such as climate and disease regulation and pollination; supporting services, such as soil formation; and cultural services, such as areas with spiritual and recreational uses.

Source Adapted from the United Nations Millennium Ecosystem Assessment

Habitat The place where a species lives and that provides food and shelter. A particular species can occupy different habitats at different stages of its life to forage for food, find shelter and breed

pource. Adapted from Aquatic Living Resources, July 1995

Introduction

- 3.1 Canada includes more than 5.8 million square kilometres of marine surface area within its territory and has the world's longest coastline, covering three oceans and the Great Lakes. The biodiversity of Canada's marine areas plays a key role in our social and economic prosperity. According to Fisheries and Oceans Canada's Marine Protected Areas Policy, the richness and biodiversity of Canada's oceans provide enormous potential for both present and future generations. Our marine ecosystems support a remarkable diversity of species, including commercial and non-commercial fish, marine mammals, invertebrates, and plants.
- 3.2 In addition to the benefits that these ecosystems provide, such as oxygen production and carbon storage, Canada's ocean biodiversity generates economic benefits through commercial and recreational fisheries, tourism, education, and research. Benefits of marine biodiversity to the Canadian economy include the following, based on data from Parks Canada and Fisheries and Oceans Canada:
 - fishing and fish processing, which contributed almost \$3.3 billion to Canada's gross domestic product (GDP) in 2006;
 - the lobster catch, which generated over \$1 billion in 2011 exports;
 - the snow and queen crab catch, which generated over \$613 million in 2011 exports;
 - marine tourism, which generated expenditures of about \$4.3 billion in 2006; and
 - whale watching in the Saguenay region of Quebec, which attracted more than one million visitors in 2007, spending an estimated \$161.7 million in the region. Parks Canada estimates that the marine protected area in the Saguenay region generates \$3.16 in government revenues for every dollar spent on managing the site.
- 3.3 These activities are sustained by marine habitats and biodiversity, without which commercial stocks could not exist. Commercially important species rely on non-commercial species for their existence. For example, lobsters eat both commercial and non-commercial marine animals. Lobsters are, in turn, an important food source for various economically important fish, such as flounder and cod. Whales, such as the humpback, have various habitat requirements. These whales visit the Saguenay region of the St. Lawrence River to feed on various non-commercial species, such as plankton. Because marine species are

highly interconnected, a vast range of species and habitats have an impact on those species that our fisheries and tourism depend on.

- 3.4 Conserving and protecting marine biodiversity is not solely an environmental priority. As recently reported at the 2012 World Economic Forum, the ocean's natural capital (the stock of ecological goods and services that can be maintained for use in the future) is intrinsic to the health and functioning of the world economy. Today, more than 1.5 billion people count on fish for their daily protein source. With the world population projected to reach 9 billion by 2050, humankind needs to double the production of food without further depleting Earth's natural capital.
- 3.5 According to a recent article in the Harvard Business Review, creating marine protected areas (MPAs) where no fishing can take place—covering at least 20 percent of the oceans—would allow these areas to recover from overfishing. Based on data from 29 countries and 124 MPAs, on average, the number of species in these protected areas increased by 21 percent, and organisms grew 28 percent larger. As well, on average, the number of organisms per hectare increased by 166 percent, and the total weight of organisms rose by 446 percent in these areas.
- 3.6 According to the same article, MPAs where no fishing can take place contribute to higher catches in neighbouring areas, which more than offset the financial losses to fishers caused by their creation. For example, the Great Barrier Reef Marine Park—of which one third is a zone where fishing is banned—generates about AUS\$5.5 billion (about CAN\$5.7 billion) a year in net economic benefits and has created more than 50,000 full-time jobs. The cost of creating and managing MPAs that would close off 20 percent of the world's oceans is estimated to be as low as \$5 billion a year—less than the estimated net benefits that are generated from the one MPA cited above.
- 3.7 There is growing recognition that marine protected areas and networks of them can provide important ecological and economic benefits. According to the National Framework for Canada's Network of Marine Protected Areas, these benefits include
 - protecting unique, rare, and threatened species, and processes and habitats essential for ecosystem functioning, such as spawning;
 - maintaining the natural range of species;
 - protecting coastal ecosystems, such as wetlands, that buffer against damage from extreme weather events;

- enabling adequate mixing of the gene pool;
- mitigating the impact of climate change by capturing and storing carbon;
- providing refuge for marine species displaced by habitat loss elsewhere:
- enhancing the ability of marine areas to resist or recover from ecosystem disturbances; and
- generating social and economic benefits, such as sustainable fisheries and enhanced recreation opportunities.
- 3.8 The North American Marine Protected Areas Network organization, founded in 1999 under the auspices of the Commission for Environmental Cooperation, represents a tri-national (Canada, Mexico, and United States) network of resource agencies, MPA managers, and other relevant experts committed to strengthening the conservation of biodiversity in critical marine habitats and to helping foster a comprehensive network of marine protected areas in North America. According to the organization, MPAs "help restore and maintain the health of oceans and provide some protection from stressors such as fishing, habitat destruction, and pollution."
- 3.9 However, the health of the world's oceans is currently in decline and has been profoundly affected by human activities. According to the International Union for the Conservation of Nature (IUCN) and other respected sources of science-based analyses, fisheries are at full production globally. Many fish stocks are overfished and many fish species are endangered. There are dead zones where oxygen levels are too low to sustain most life, climate change is altering habitat and ocean currents, and pollution is pervasive. According to Fisheries and Oceans Canada, in 2009 the quantity of Canada's fishery catches was 41 percent less than the peak harvest volumes of the late 1980s, and the 2009 landed values were among the lowest on record since 1984.
- 3.10 Marine protected areas are a key tool Canada is using to protect and conserve marine environments. To date, Fisheries and Oceans Canada and Parks Canada have established 10 federal marine protected areas (called "national marine conservation areas" by Parks Canada) under legislation. Two additional sites are awaiting official designation in legislation, and 17 more have been proposed as federal MPAs (Exhibit 3.1).

Network of marine protected areas—"A collection of individual marine protected areas that operates cooperatively and synergistically, at various spatial scales, and with a range of protection levels, in order to fulfill ecological aims more effectively and comprehensively than individual sites could alone."

Source International Union for the Conservation of Natur

International Union for the Conservation of Nature (IUCN)—An international forum for governments, non-governmental organizations, scientists, businesses, and local communities. It participates in implementing the UN Convention on Biological Diversity's Programme of Work on Protected Areas. It has developed international standards for the establishment and management of MPAs and MPA networks that are recognized worldwide. Canada has adopted the IUCN's definition of an MPA network as a basis for the National Framework for Canada's Network of Marine Protected Areas.

Existing and proposed marine protected areas managed by Fisheries and Oceans Canada and Parks Canada



Marine Protected Areas

Fisheries and Oceans Canada

- Endeavour Hydrothermal Vents
- Bowie Seamount
- **13** Tarium Niryutait
- 0 000 10
- Gilbert Bay
- EastportThe Gully
- O The daily
- Basin Head
- Musquash Estuary

Parks Canada

Marine protected areas managed within Parks Canada's National Marine Conservation Areas System

- Gwaii Haanas
- 2 Saguenay—St. Lawrence

Marine protected areas not officially designated under legislation yet

- 1 Lake Superior
- 2 Fathom Five

Proposed Marine Protected Areas

Fisheries and Oceans Canada

- Race Rocks
- St. Lawrence Estuary
- Shediac Valley
- American Bank
- St Anns Bank
- Laurentian Channel
- Hecate Strait / Queen Charlotte Sound Glass Sponge Reefs
- Paulatuk (Darnley Bay)

Parks Canada

- Southern Strait of Georgia
- Lancaster Sound
- Îles de la Madeleine
- Bathurst Polynya
- 1 Churchill River/Nelson River
- Twin Islands/Rivière du Castor (Tawich)
- Bonavista Bay/Funk Island
- South Coast Fjords
- Prince Edward Point

Source: Fisheries and Oceans Canada and Parks Canada

3.11 According to Fisheries and Oceans Canada, federal, provincial, and territorial governments and non-governmental organizations are to date collectively protecting about 1 percent of Canada's oceans and Great Lakes through MPAs. To put this into perspective, the International Union for the Conservation of Nature recommended at the 2003 World Parks Congress that networks of marine protected areas include strict protection of 20 to 30 percent of each habitat. In 2010, Canada agreed to an international target under the United Nations Convention on Biological Diversity to conserve 10 percent of marine areas through networks of protected areas and other conservation measures by 2020.

Federal roles and responsibilities

- 3.12 The federal government's mandate regarding MPAs is anchored in federal legislation and policy, such as the Canada Wildlife Act, the Oceans Act (in force in 1997), the Parks Canada Agency Act (1998), and the Canada National Marine Conservation Areas Act (2002). Canada's Federal Marine Protected Areas Strategy (2005) and the National Framework for Canada's Network of Marine Protected Areas (2011) commit the federal government to working collaboratively to establish a network of marine protected areas. According to the National Framework, Canada's vision is to establish "an ecologically comprehensive, resilient, and representative national network of marine protected areas that protects the biological diversity and health of the marine environment for present and future generations."
- **3.13** Canada's *Oceans Act* gives Fisheries and Oceans Canada the responsibility for leading and coordinating the development and implementation of a national network of marine protected areas on behalf of the Government of Canada. It also provides the Department with the mandate to establish and manage marine protected areas to conserve and protect
 - commercial and non-commercial fish, marine mammals, and their habitat;
 - endangered or threatened marine species and their habitats;
 - unique habitats;
 - marine areas of high biodiversity or biological productivity; and
 - any other marine resource or habitat as needed to fulfill the mandate of the Minister.



Whale watching in the Saguenay–St. Lawrence MPA provides opportunities for public education and enjoyment of Canada's wildlife.

Photo: Parks Canada / J-L Provencher

Fisheries and Oceans Canada also retains responsibility, under the *Fisheries Act*, for regulating the fisheries in all federal marine protected areas.

- 3.14 Parks Canada has a mandate to establish MPAs (known as national marine conservation areas) to
 - protect and conserve representative examples of Canada's natural and cultural marine heritage, and
 - provide opportunities for public education and enjoyment.

Environment Canada has a mandate to protect habitat for a variety of wildlife, including migratory birds and species at risk.

- 3.15 The October 2010 Federal Sustainable Development Strategy sets out federal targets and implementation strategies, for example, developing a federal–provincial–territorial network of MPAs by 2012.
- 3.16 In the June 2011 Speech from the Throne, the Government of Canada announced its intention to "engage a broad range of stakeholders on the development of a National Conservation Plan, to move our conservation objectives forward and better connect all Canadians with nature." In June 2012, the House of Commons Standing Committee on Environment and Sustainable Development published its report, entitled Study to Provide Recommendations Regarding the Development of a National Conservation Plan. According to the report, consulted stakeholders called for Canada to adopt, at a minimum, the target of conserving 10 percent of marine areas by 2020 as established under the United Nations Convention on Biological Diversity.
- 3.17 In 1992, Canada ratified the United Nations Convention on Biological Diversity, under which Canada and over 190 other countries committed to establishing a system of protected areas to conserve biological diversity, including the marine environment. Canada committed to conserving biological diversity at subsequent formal conferences in 2002, 2004, 2010, and 2012. A summary of Canada's activities and commitments is shown in Exhibit 3.2.

Previous audit work

3.18 In the Commissioner's 2005 September Report, Chapter 1—Canada's Oceans Management Strategy, the Commissioner noted that Fisheries and Oceans Canada had fallen far short of meeting its commitments and targets under the *Oceans Act* and Oceans Strategy. It had designated only two marine protected areas and made little progress on developing and implementing a national system of marine protected areas. The report also noted that the recently released Oceans Action Plan did not address all of the barriers to implementing a national oceans strategy, including the need for strong leadership and coordination over the long term, and the need for adequate funding.

Exhibit 3.2	Canada's activities	and commitments to	protect marine b	nindiversity
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1986	Parks Canada introduces its first National Marine Parks Policy
1992	Canada ratifies United Nations Convention on Biological Diversity
1995	Parks Canada releases Sea to Sea to Sea, Canada's National Marine Conservation Areas System Plan
1995	Canadian Biodiversity Strategy is launched
1997	Oceans Act comes into force
1999	Fisheries and Oceans Canada releases its Marine Protected Areas Policy
1999	Fisheries and Oceans Canada releases its National Framework for Establishing and Managing Marine Protected Areas
2002	World Summit on Sustainable Development (Rio+10) declaration is made; its plan of implementation includes a commitment to establish representative marine protected area networks by 2012
2002	Canada National Marine Conservation Areas Act comes into force
2002	Canada's Oceans Strategy is launched
2005	Oceans Action Plan is launched
2005	Canada's Federal Marine Protected Areas Strategy is released
2007	Canada's Health of the Oceans Initiatives are launched
2010	Meeting of the Conference of the Parties of the United Nations Convention on Biological Diversity results in an international target to conserve 10 percent of coastal and marine areas by 2020
2010	Federal Sustainable Development Strategy is tabled in Parliament (includes MPA targets and implementation strategies)
2011	National Framework for Canada's Network of Marine Protected Areas is released
2012	United Nations Conference on Sustainable Development (Rio+20) is held; Canada commits to protecting and restoring the health, productivity, and resilience of oceans and marine ecosystems, and to maintain their biodiversity

Environmental petition — A formal means established under the *Auditor General Act*, for Canadians to bring their concerns about environmental issues to the attention of federal ministers and departments and to obtain a response. For further information on the petitions process, please consult Chapter 5 in this report or our website at www.oag bvg.gc.ca

Environmental petitions

3.19 During the course of this audit, an environmental petition (No. 337) was submitted to the Office of the Auditor General of Canada by the World Wildlife Fund with a request for information from the Minister of Fisheries and Oceans on why the government had not yet put in place a national network of MPAs as required under the Oceans Act, which came into force 15 years ago. The Department responded that the Act does not set a time limit for completion of this work. The petitioner also questioned why the Department had not met its public commitment to complete a management plan within two years of the designation of the Bowie Seamount Marine Protected Area. The Department responded that drafting and finalizing the management plan remains a priority for the 2012–13 fiscal year. Our audit also examined these issues, and the results are presented in the Observations and Recommendations section of this chapter.

Focus of the audit

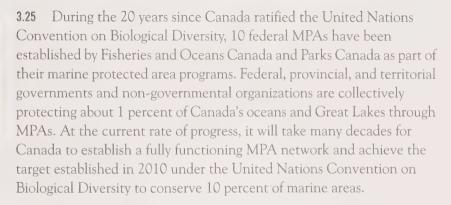
- 3.20 Our audit examined whether Fisheries and Oceans Canada and Parks Canada have planned, established, and managed a network of marine protected areas to conserve and protect Canada's marine biodiversity and fulfill Canada's international targets under the United Nations Convention on Biological Diversity, in accordance with its legislative mandates and policies, and recognized good practices.
- **3.21** While Environment Canada also has a mandate for protecting biodiversity, the Department was not included in this audit, because it is the subject of a separate audit on protecting biodiversity, which we plan to report in the spring of 2013.
- **3.22** The types of marine protected areas that Parks Canada establishes specifically for marine protection are known as national marine conservation areas. "Marine protected area" or MPA is a broad term applied to various types of protected marine areas worldwide. In this chapter, we use the term MPA to apply to all types of marine protected areas.
- 3.23 More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

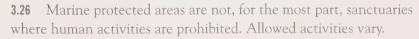
Observations and Recommendations

Creation of marine protected areas

3.24 We examined the progress made by Fisheries and Oceans Canada and Parks Canada in establishing individual marine protected areas (MPAs) and a national network of marine protected areas. We examined actions taken by these entities to plan, establish, and manage MPAs and the documentation that supported the progress to date. We identified key factors that affected Canada's progress, summarized below, and elaborated on the specific work undertaken by Fisheries and Oceans Canada and Parks Canada in subsequent sections.

Many factors impede Canada's progress on creating marine protected areas





- The MPAs created by Parks Canada do not allow for extraction of or exploration for non-renewable resources, such as oil and gas. However, they may allow the extraction of renewable resources, such as commercial and recreational fishing, depending on regulations that may specify limits, prohibited activities, and exceptions in certain zones. Currently, zoning regulations are not in force for the MPAs established by Parks Canada. Therefore, fishing is allowed in accordance with the Fisheries Act.
- The MPAs established by Fisheries and Oceans Canada can allow both non-renewable and renewable resource extraction. The regulations for each MPA define a range of prohibited activities and allow for certain defined activities depending on the zoning that is put into place. Fishing is allowed in specific areas of all the MPAs established by Fisheries and Oceans Canada to date. Oil and gas exploration and development is also allowed within the Tarium Nirvutait MPA.



One purpose of the Tarium Nirvutait MPA is to protect one of the world's largest summering populations of beluga whales.

Photo: Fisheries and Oceans Canada



Tarium Niryutait MPA

- 3.27 When establishing MPAs, the entities consult and negotiate extensively with multiple authorities and stakeholders. Federally, consultations may occur with other federal departments, including Natural Resources Canada, Transport Canada, and Aboriginal Affairs and Northern Development Canada. Other authorities and stakeholders can include provincial governments, joint federal—provincial bodies, such as the offshore petroleum boards, Aboriginal peoples, environmental organizations, and affected industries, like oil and gas, fishing, and tourism. Critical aspects of the establishment process, such as the time required for consultation and negotiation with other authorities and stakeholders, for ministerial approval, and for the legislative process, are unpredictable and outside the direct control of program managers at Fisheries and Oceans Canada or Parks Canada. As a result, the establishment process typically takes years, if not decades, to complete.
- 3.28 For example, when Parks Canada established the Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, the process took more than 20 years. It took over 10 years for Fisheries and Oceans Canada to establish the Tarium Niryutait MPA and more than five years to establish The Gully MPA. Exhibit 3.3 shows The Gully MPA in the Scotian Shelf bioregion, and illustrates the variety of stakeholders that are involved in this region.
- **3.29** Factors that have affected the rate of progress in creating MPAs include
 - prolonged jurisdictional negotiations, including unresolved land claims;
 - competing interests of stakeholders;
 - poor understanding by Canadians of the environmental and socio-economic benefits of MPAs;
 - delays in the approval process; and
 - lengthy legislative and regulatory processes.
- 3.30 However, substantial progress is possible and has been achieved in other jurisdictions. Australia and California, for example, have reported that they have protected about 10 percent and 13.5 percent of their marine environments, respectively, and created networks of marine protected areas. Australia is proposing to expand its marine protected areas to cover 38 percent of Australian waters; 14 percent will be classified as "fully protected."

Exhibit 3.3 There are multiple stakeholders with interests in the Scotian Shelf bioregion



- Right whale critical habitat (Grand Manan Basin)
- Right whale critical habitat (Roseway Basin) and International Marine Organization Area To Be Avoided
- 3 Lobster fishing area 40 (closed to inshore-offshore lobster fishing)
- 4 Northeast Channel Coral Conservation Area
- 5 Juvenile haddock closure
- 6 Sable Island National Park
- Northern bottlenose whale critical habitat
- 8 Lophelia Coral Conservation Area

Note: Commercial fisheries are active throughout the Scotian Shelf bioregion. Source: Adapted from Fisheries and Oceans Canada data

Oil and gas

Principal shipping lines

Commercial fishing

- 3.31 Australia has attributed its progress to factors such as sustained leadership, communication, active stakeholder engagement, and public support, as well as commitment to financial assistance for those affected. According to California officials, progress in that state has resulted from similar factors, including sustained leadership over successive governments and consensus-driven consultations (Exhibit 3.4).
- 3.32 The barriers that we identified in our 2005 audit continue to impede progress in establishing a national network. According to a 2012 Fisheries and Oceans Canada evaluation, surveyed respondents identified three challenges in establishing and managing marine protected areas in Canada:
 - a lack of will or weak commitment to marine protected areas at the federal level.
 - · difficulties in resolving conflicting interests of stakeholders, and
 - insufficient resources.

Management of Parks Canada and Fisheries and Oceans Canada indicated to us that recent budget cuts may affect the resources available for work on MPAs. The entities have indicated that it is too early to determine what effect these changes will have on establishing and managing marine protected areas.

Exhibit 3.4 There has been substantial progress in establishing MPAs in California

According to California state officials, the *Marine Life Protection Act*, passed by the state legislature in 1999, required the California Department of Fish and Game to redesign its system of MPAs to increase its coherence and effectiveness at protecting the state's marine life, habitats, and ecosystems.

A public–private partnership known as the Marine Life Protection Act Initiative was formed to help implement the new Act. The partnership included the California Natural Resources Agency, the California Department of Fish and Game, and the Resources Legacy Fund Foundation. Scientists, resource managers, experts, stakeholders, and members of the public also played important roles in guiding the outcomes of this partnership.

California has established 104 MPAs, covering approximately 1,842 square kilometres (about 13.5 percent) of California's coastal waters. According to participants in the Marine Life Protection Act Initiative, progress was the result of several factors.

According to officials, key success factors included consistent leadership from successive governors of California, adequate funding (including the use of alternative funding sources outside of government), a task force of policy makers who facilitated the process, consensus-driven consultation, and the use of scientific experts who provided guidance on the application of the Act's design guidelines to the task force and stakeholders.

Source: California Marine Life Protection Act Initiative and California Department of Fish and Game

- **3.33** Good information on the environmental and socio-economic benefits of MPAs as well as the expected costs is important for informed decision making. To date, limited work has been carried out by Fisheries and Oceans Canada and Parks Canada to identify and assess the value of specific ecosystem services that existing and planned marine protected areas are expected to provide in Canada.
- **3.34** Recommendation. Fisheries and Oceans Canada and Parks Canada should identify specific ecosystem services provided by existing and planned marine protected areas and assess their values so that Canadians and federal policy makers have better information to understand their associated benefits and costs.

Fisheries and Oceans Canada's response. Agreed. In recognition of the complexity of the methodology to value ecosystem services and the complexity of the scientific information required for carrying out such evaluation, a case study will be undertaken to test existing methodologies and determine the types of scientific information and the level of detail required to illustrate the benefits of ecosystem services for an existing marine protected area or a common ecosystem service across existing marine protected areas. The results of the case study, along with the outcomes of the federal interdepartmental initiative entitled Measuring Ecosystem Goods and Services (MEGS) and international efforts (for example, The United Nations' System of Environmental-Economic Accounts (SEEA); The Economics of Ecosystems and Biodiversity (TEEB); The Natural Capital Project), will be used to develop guidelines to identify and assess the value of specific ecosystem services associated with marine protected areas so that Canadians and federal policy makers have better information to understand their associated benefits and costs. Fisheries and Oceans Canada will also improve its analyses to the extent possible and pursue available means to infer ecosystem service values from studies undertaken abroad. Implementation date: March 2014.

Parks Canada's response. Agreed. In the case of proposed marine protected areas, Parks Canada will continue to look at a range of impacts and benefits associated with the creation of new national marine conservation areas [Parks Canada's term for marine protected areas] as part of the establishment process. With respect to ecosystem services, Parks Canada will develop such information where it will better inform the feasibility assessment process. Such work, however, will have to rely on existing information as much as possible so as to not unduly delay the establishment process. For its existing marine protected areas, Parks Canada will identify ecosystem services in the

development of management plans and, in particular, in zoning plans where the issue of impacts and benefits of putting in place special protection measures is best addressed.

Development of a national network plan

3.35 We examined whether Fisheries and Oceans Canada has coordinated with Parks Canada and relevant stakeholders to develop a national plan for a network of marine protected areas (MPAs).

Fisheries and Oceans Canada has not developed a national plan for a network of marine protected areas

- **3.36** We reviewed key documents, such as policies and strategies, science advisory reports, and internal and international reporting documents. We also interviewed key officials from Fisheries and Oceans Canada and other departments.
- 3.37 We found that Fisheries and Oceans Canada led the development of the 2011 National Framework for Canada's Network of Marine Protected Areas, which provides strategic direction, including guiding principles and design recommendations for a national network of MPAs that will be composed of bioregional networks. Environment Canada, Parks Canada, most of the provinces, and the territories participated in drafting the framework. Key stakeholders and authorities, such as industry, Aboriginal peoples, and environmental groups, were also consulted. Fisheries and Oceans Canada is now coordinating the development of additional technical guidance for implementing the framework.
- 3.38 It is the role of Fisheries and Oceans Canada to bring together the contributions of participating organizations, along with its own, to ensure that the overall result functions as a national network. For the purposes of planning a national network of MPAs, the Department has defined 13 distinct bioregions in Canada's oceans and Great Lakes within which MPA networks are to be established (Exhibit 3.5). When complete, the national MPA network plan will be composed of 13 bioregional plans. Fisheries and Oceans Canada is working with other departments and authorities to develop an inventory of existing MPAs and other contributory sites (for example, closed fisheries). According to the Department, it plans to assess these sites to determine which additional MPAs are needed to create a fully functioning network.
- 3.39 Fisheries and Oceans Canada indicated that it aims to complete 8 to 10 of the 13 bioregional plans by 2020, subject to available resources within the Department. So far, the Department has identified ecologically and biologically significant areas in 9 of the 13 bioregions.

Ecologically and biologically significant areas Defined spaces that provide important services, either to one or more species or populations in an ecosystem, or to the ecosystem as a whole, as outlined in the 'vational Framework for Canada's Network of Marine Protected Areas

According to Fisheries and Oceans Canada, MPA network development is currently under way in 4 bioregions. However, we found that none of the 13 bioregional network plans has been finalized to identify the marine areas that require protection, the actions necessary to achieve the government's objectives, the expected results, and the indicators that will be monitored to determine whether Canada's commitments to protect and conserve marine biodiversity are being achieved. A national network plan would provide a basis for allocating and managing human and financial resources and for assessing progress. According to Fisheries and Oceans Canada, developing and implementing such a national plan will take decades under current funding levels.

Exhibit 3.5 Canada's network of marine protected areas will be based on 13 bioregions identified by Fisheries and Oceans Canada



Source: Fisheries and Oceans Canada

Progress on MPAs—Fisheries and Oceans Canada

- 3.40 As well as leading and coordinating the development and implementation of a national network of MPAs on behalf of the Government of Canada, Fisheries and Oceans Canada has a mandate to establish its own MPAs to contribute to this network.
- **3.41** We looked for evidence that Fisheries and Oceans Canada—in accordance with its legislative mandates and policies, and recognized good practices—has
 - developed department-level plans to contribute to the national network of marine protected areas (MPAs),
 - · established MPAs, and
 - managed those areas to conserve and protect marine biodiversity.
- 3.42 We examined federal and department strategies, policies, regulations, regulatory process documents, and ecosystem overview and assessment reports. We also interviewed key officials from Fisheries and Oceans Canada at headquarters and in the Department's regional offices.

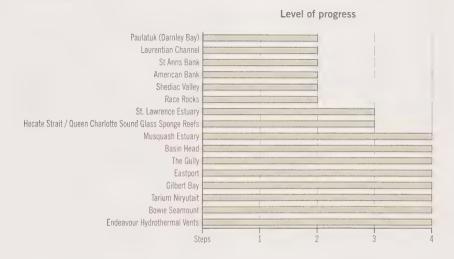
The Department's plan for contributing to a national network of marine protected areas remains incomplete

- 3.43 Fisheries and Oceans Canada has been working with other federal and provincial authorities on marine protected areas since 1997 and has defined 13 distinct bioregions for the purposes of national network planning. Since it does not have jurisdiction to establish MPAs in the Great Lakes, the Department is focusing its own MPA planning efforts on 12 of the bioregions.
- 3.44 Fisheries and Oceans Canada has not identified the complete inventory of MPAs it will establish in the 12 bioregions it is responsible for. The Department indicated that it will not be able to determine what its own contribution will be until it has identified the contributions of other federal and provincial authorities and carried out a gap analysis to determine which additional sites will be required to create functioning MPA networks within the 13 bioregions. The Department has made progress since our 2005 audit, where we found it had established only two MPAs. It now has established eight MPAs and is working toward the designation of eight potential MPAs, called areas of interest. The Department follows a four-step process to establish MPAs:
 - Step 1 is the selection of an area of interest.
 - Step 2 is the assessment of the area of interest.

- Step 3 is the development of and consultation on regulatory intent.
- Step 4 is the development of a regulation and the designation of the MPA.

Exhibit 3.6 shows the Department's progress in establishing MPAs. The Department acknowledged that the 2010 Federal Sustainable Development Strategy target of establishing six additional MPAs by 2012 will not be met.

Exhibit 3.6 Fisheries and Oceans Canada has established eight MPAs and is working on eight proposed MPAs



Fisheries and Oceans Canada followed its legislative requirements for MPA establishment

- 3.45 The four-step process to be followed by Fisheries and Oceans Canada for establishing individual MPAs is set out in the National Framework for Establishing and Managing Marine Protected Areas (1999) and in the 2009 Oceans Act Marine Protected Areas Policy.
- 3.46 We examined whether these steps were followed for the eight MPAs completed and eight under development and whether the MPAs were established for one or more of the reasons specified in the Oceans Act.
- **3.47** We found that Fisheries and Oceans Canada has established eight marine protected areas in accordance with prescribed processes and with its legislative mandate under the *Oceans Act*. The regulations for the MPAs identify the boundaries of the marine protected areas, the management zones, prohibited activities, and exceptions.

3.48 The Department's eight MPAs were frequently suggested by local communities. Although the Department considers them to be ecologically significant, it acknowledged that its selection process was not designed to consider their linkages to one another or their contributions to a national network of marine protected areas. As network planning progresses, Fisheries and Oceans Canada will assess their contribution to a network.

The Department has not systematically monitored or managed its marine protected areas

- 3.49 Current management plans are in place for six of eight Fisheries and Oceans Canada MPAs. Plans were not in place at the time of our audit for the Bowie Seamount and Tarium Niryutait MPAs. Although the Department committed to having a plan developed by April 2010, two years after designation, the management plan for the Bowie Seamount MPA is still in draft form. According to the Department, the delay was caused by stakeholder concerns, such as the management of the sablefish fishery. The Department committed to developing a management plan for the Tarium Niryutait MPA by August 2012; at the conclusion of the audit it was still in draft form.
- 3.50 The 2009 Oceans Act Marine Protected Areas Policy prescribes departmental requirements for management plans, including elements relating to governance, monitoring, reporting, surveillance, and enforcement. Existing management plans address these elements. However, the plans lack details on the resources required to effectively implement them. We examined the management approach for The Gully MPA as well as progress on monitoring against objectives for the MPA (Exhibit 3.7).
- 3.51 Performance indicators are critical to determine whether conservation objectives are being met and whether management actions are effective in achieving planned results—in short, to determine whether MPAs are making a difference. We found that although proposed indicators had been developed for six of the Department's eight marine protected areas, they were being systematically monitored in only three MPAs.
- 3.52 Fisheries and Oceans Canada has indicated that MPAs will use different zoning to allow sustainable economic activities that meet conservation goals. However, the Department has not developed practical guidance on how its officials are to determine which economic activities are compatible with the MPAs' conservation objectives.

3.53 Recommendation. Fisheries and Oceans Canada has indicated that marine protected areas (MPAs) will be managed so that sustainable economic opportunities compatible with the conservation objectives of the MPAs will be permitted through different zoning in the MPAs. The Department should develop practical guidance on how department officials are to assess economic opportunities to determine whether they are compatible with the conservation objectives of the MPAs.

The Department's response. Agreed. Fisheries and Oceans Canada will develop operational guidance detailing an approach for determining which activities are compatible with the conservation objectives of the marine protected area. Implementation date: March 2014.

Exhibit 3.7 There is no monitoring plan in place for The Gully MPA, but ad hoc monitoring is being conducted

In May 2004, Canada's Minister of Fisheries and Oceans designated The Gully MPA off the coast of Nova Scotia. The Gully MPA is the largest submarine canyon in eastern North America. Some of the conservation priorities in The Gully include protecting species, such as the endangered northern bottlenose whale, and the seabed habitat, including cold-water corals, from damage caused by human activities.

In 2008, the management plan for The Gully was released to provide



The endangered bottlenose whales are year-round inhabitants of The Gully.

Photo: Fisheries and Oceans Canada / H. Moors-Murphy guidance to Fisheries and Oceans Canada, other regulators, marine users, and the public on protecting this important ecosystem. The plan provides a multi-year vision, objectives, and priorities for management. The Gully contains three management zones with different levels of protection.

The Gully MPA regulation makes it an offence for any person to disturb, damage, destroy, or remove any living marine organism or any part of its habitat, including the seabed. While the regulations do not affect existing or future rights to petroleum within the MPA, the Canada–Nova Scotia Offshore Petroleum Board has banned exploration within this area since 1998.

The Department assessed The Gully's management effectiveness in 2010 and identified the development and implementation of a comprehensive monitoring plan or program within two to five years as a management priority. Fisheries and Oceans Canada has yet to develop a monitoring plan to measure performance against the conservation objectives for The Gully.



The Gully MPA

Source: Fisheries and Oceans Canada

In the interim, the Department is compiling information from various sources to assess compliance with The Gully MPA regulations governing fisheries management, vessel traffic, and pollution discharges. In addition, the Department reported that ad hoc research and monitoring activities are taking place; for example, to assess the status of the endangered northern bottlenose whale.

Progress on MPAs—Parks Canada

- 3.54 The Canada National Marine Conservation Areas Act empowers Parks Canada to contribute to Canada's network of marine protected areas (MPAs) by establishing protected areas that are representative of the Atlantic, Arctic, and Pacific Oceans and the Great Lakes and that will help to maintain healthy marine ecosystems. Along with MPAs established by others, including Fisheries and Oceans Canada, Parks Canada MPAs will contribute to a national network of MPAs.
- 3.55 We looked for evidence that Parks Canada—in accordance with its legislative mandates and policies, and recognized good practices—has
 - developed agency-level plans to contribute to the national network of marine protected areas,
 - established MPAs (known as national marine conservation aréas), and
 - managed MPAs.
- **3.56** We examined key documents, such as policies and strategies, scientific studies, and reporting documents. We interviewed key stakeholders and officials from Parks Canada, at headquarters and in the Agency's regional offices.

Parks Canada's plan for contributing to the national network of MPAs remains incomplete

- 3.57 Parks Canada follows a five-step process to establish MPAs:
 - Step 1a is the completion of a regional analysis to identify preliminary representative areas in the marine region.
 - Step 1b is the completion of field studies by Parks Canada officials to confirm representative areas in the marine region.
 - Step 2a is the completion of a selection report that recommends the preferred representative area for protection in the marine region.
 - Step 2b is official acknowledgement from senior management of a preferred area as an MPA candidate site.
 - Step 3 is the completion of a detailed feasibility assessment, including public consultations.
 - Step 4 is the negotiation of agreements with provinces, territories, and Aboriginal peoples, where necessary, setting out the terms and conditions under which the MPA will be established and managed.
 - Step 5 is the establishment of a new MPA under legislation.

- 3.58 The Agency has made substantial progress on MPA planning. Parks Canada has defined and mapped 29 marine regions with distinct biological and oceanographic features and plans to establish MPAs representing each of these regions. It has so far identified preliminary representative marine areas (step 1a) within 28 of the 29 regions, and selected candidate sites for MPAs in 14 marine regions (step 2b). Exhibit 3.8 shows the Agency's progress in establishing MPAs.
- 3.59 Despite this progress, Parks Canada's plan for representing each of its marine regions and contributing to the national network of MPAs remains incomplete. It has not yet identified final candidate sites in 15 of its marine regions.

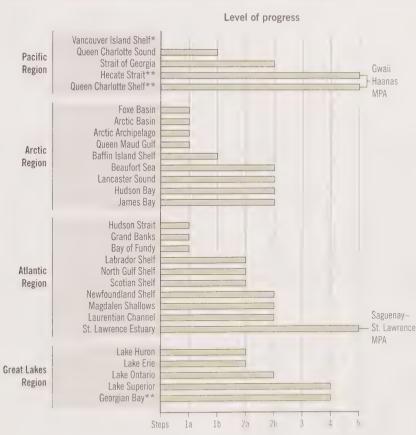


Exhibit 3.8 Parks Canada has marine protected areas in 3 of its 29 marine regions

^{*} Step 1a has not been completed.

^{**} Step 3 (feasibility assessment) was not completed for these marine regions, because agreements to establish marine protected areas (MPAs) in these regions were already in place.

3.60 Parks Canada's 1994 National Marine Conservation Areas Policy and the Canada National Marine Conservation Areas Act require that it identify and select MPAs that are the most representative of the marine region, and that are the most natural. We examined the studies that Parks Canada has completed since the policy was put in place. We found that the Agency has identified and selected MPAs in keeping with its legislation and policies. Parks Canada conducts studies on geological, oceanographic, and biological characteristics and the impact of human activities to identify areas that are representative of the marine region. It completes further studies to assess these sites and choose one as an MPA candidate.

Parks Canada followed its legislative requirements for MPA establishment

- 3.61 Once candidate sites for marine protected areas are selected, Parks Canada requires ministerial approval to proceed with a feasibility assessment and, ultimately, with the establishment of new MPAs. Two feasibility assessments have been completed and three are currently under way. Parks Canada involves stakeholders in its feasibility studies. When a study is completed, the relevant governments and, in specific cases, Aboriginal peoples, will determine whether there is enough community and stakeholder support to declare the MPA feasible. Broad support is considered a key success factor for ensuring long-term compliance with zoning restrictions that may be imposed within MPAs. Parks Canada has stated it will not proceed with a feasibility study where there is a lack of provincial or territorial support. If consultations support the feasibility of the proposed MPA, Parks Canada may proceed with formal agreements, which set out terms and conditions for creating and managing the area.
- 3.62 We found that Parks Canada has established two MPAs under legislation that cover three of its marine regions (Saguenay–St. Lawrence and the Gwaii Haanas site, which straddles two marine regions). It has also negotiated agreements for two additional MPAs in the Great Lakes (Fathom Five National Marine Park and Lake Superior National Marine Conservation Area). The Gwaii Haanas MPA is the first and so far only MPA to be designated under the Canada National Marine Conservation Areas Act. We found that it was established in accordance with the legislative requirements under that Act. Exhibit 3.9 summarizes the establishment process for the Gwaii Haanas MPA, showing the consultations and compromises involved in creating that MPA.

3.63 Although agreements have been negotiated for two new MPAs in the Great Lakes, these areas have not yet been designated under the legislation and as a result, zoning regulations cannot be enacted or enforced to protect them. However, Parks Canada indicated to us that, since the agreements allow the Agency to carry out operational development, including management planning, it considers these sites to be established MPAs.

3.64 Parks Canada does not have a timeline for establishing MPAs in each of its 29 marine regions. However, the Agency has made short-term commitments. For example, in 2002, Parks Canada committed to establishing five new MPAs by 2007. No MPAs were established in legislation during that period. In 2010, the Agency revised its target to establish a total of four MPAs by March 2013, even though, at that time, it had already reported that it had succeeded in establishing four MPAs. However, as noted, the two Great Lakes MPAs have not been formally designated under legislation and therefore MPA zoning cannot be enacted or enforced to protect these areas.

Exhibit 3.9 Parks Canada manages the Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site cooperatively with the Haida Nation

Partnership agreements led to a unique cooperative management arrangement for the Gwaii Haanas MPA, officially named Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site. In 1993 and 2010, agreements were signed by the

Haida
Gwaii
(formerly
Queen
Charlotte
Islands)

British
Columbia

Gwaii Haanas

Gwaii Haanas MPA Source: Parks Canada

Government of Canada and the Haida Nation to cooperatively manage the terrestrial and marine areas of Gwaii Haanas respectively.

Before the Gwaii Haanas MPA was established in 2010, Parks Canada and the Council of the Haida Nation jointly conducted extensive scientific studies and used scientific, cultural, and socioeconomic information to guide decision making in the planning process for the Gwaii Haanas area.

Parks Canada researched international best practices and drew on advice from Canadian scientists to determine that fully protecting 30 percent of the Gwaii Haanas MPA would be an optimal starting point to guide zoning consultations. The Haida Nation recommended that about 23 percent of the total area be fully protected. The area of full protection was refined to 10 percent based on socio-economic considerations and consultations, and further reduced, in the interim zoning



One third of British Columbia's sea lion population calls Haida Gwaii home.

Photo: Parks Canada / Debbie Gardiner

plan, to 3 percent. According to Parks Canada, this 3 percent includes key ecological areas, the protection of which will not have a substantive impact on the fishing sector or other stakeholder groups. The zone of full protection will not be finalized until the completion of the full zoning plan, which is due in 2015.

Parks Canada has not systematically monitored or managed its marine protected areas

- 3.65 Under the Canada National Marine Conservation Areas Act, an interim management plan containing management objectives and a zoning plan must be tabled in each house of Parliament as part of establishing an MPA under legislation. An interim management plan was tabled in 2010 for the Gwaii Haanas MPA, with a full management plan due in 2015. The Saguenay–St. Lawrence Marine Park Act (in force in 1998) requires that a management plan on resource protection, zoning, and visitor use be reviewed at least once every seven years. Parks Canada's 2008 Guide to Management Planning prescribes content requirements for management plans. A management plan was completed in 1995, prior to the Park's establishment. The management plan was revised 15 years later, in 2010. The revised management plan meets legislative and policy requirements.
- 3.66 Parks Canada has a regulation on marine activities in the Saguenay–St. Lawrence Marine Park (primarily whale watching) that it enforces. It has finalized a zoning plan with the province of Quebec. However, that zoning plan has not yet been legislated, and as a result, Parks Canada does not yet have the regulatory means to enforce it. There are also outstanding issues to resolve, ranging from access to private property to commercial fish harvesting. We examined the management approach for the Saguenay–St. Lawrence Marine Park and documented our observations (Exhibit 3.10).
- 3.67 An important part of managing MPAs is the ability to measure the results achieved against established objectives. In 2003, the Agency committed to developing a set of core marine indicators and monitoring protocols. It has not yet done so. A report on the Saguenay–St. Lawrence Marine Park was prepared in 2007, but the absence of performance measures prevents Parks Canada from objectively evaluating the health of the park or results achieved against established objectives. A report on the health of the Gwaii Haanas MPA is expected in the 2013–14 fiscal year.
- **3.68** As a result, we found that while Parks Canada reports on its progress in establishing MPAs, it is not yet able to measure the ecological health of its established MPAs against planned results.
- 3.69 Under the Canada National Marine Conservation Areas Act, Parks Canada is required to manage its MPAs for ecologically sustainable use with protections ensured through different types of zoning in the

MPAs. However, the Agency has not formalized practical guidance on how ecologically sustainable use is to be assessed and implemented in relation to its MPAs.

3.70 Recommendation. Parks Canada should develop practical guidance on how ecologically sustainable use is to be assessed and implemented in relation to its MPAs.

The Agency's response. Agreed. In 2012, Parks Canada established a Marine Policy unit to lead the development of guidance for the effective management of national marine conservation areas (NCMAs) [Parks Canada's term for marine protected area]. A priority for this new work unit is to formally articulate the Agency's understanding of ecologically sustainable use, a core concept with regard to the management and assessment of NMCAs. The articulation of this policy concept will subsequently form the basis for the development of national guidance for NMCA zoning, monitoring, and reporting. It will also support the NMCA establishment process by facilitating effective communications of the concept to stakeholders and partners.

Exhibit 3.10 Parks Canada is promoting environmental stewardship as part of its strategy for implementing the Saguenay–St. Lawrence Marine Park management plan

The Government of Canada and the province of Quebec jointly established the Saguenay–St. Lawrence Marine Park in 1998, in part because of community concern about the health of the resident beluga whale population and its habitat.

Parks Canada is implementing the park management plan in part by promoting environmental stewardship. For example, Parks Canada is part of a group of park managers, scientists, and industry members, called the Eco-whale Alliance. It has developed

a charter for responsible whale watching practices. Almost all of the companies operating whale watching excursions in the area have signed on to the charter and committed to reducing their impact on the environment and on marine mammals.



Saguenay-St. Lawrence Marine Park MPA



Whale watching is a significant part of marine tourism in the Saguenay region Photo: Parks Canada / J-L Provencher

Sustainable Development Strategy commitments

The entities have not achieved their Federal Sustainable Development Strategy objectives for marine protected areas

3.71 The Government of Canada's 2010 Federal Sustainable Development Strategy includes commitments related to marine protected areas that were to be met by 2012. We compared the results of our audit work against these commitments for both Fisheries and Oceans Canada and Parks Canada. We found that only one of these targets had been substantially met by the end of our audit period (Exhibit 3.11).

Exhibit 3.11 Entities have not met their Federal Sustainable Development Strategy commitments

Federal Sustainable Development Strategy commitments	Our observations	Progress
Fisheries and Oceans Canada		
Develop a federal–provincial– territorial network of marine protected areas by 2012	torial network of marine has not developed a plan for a	
Identify indicators and develop draft monitoring plans for existing marine protected areas by 2012	The Department has identified indicators for six of its eight MPAs and has developed monitoring plans for, and is systematically monitoring, three of them.	Substantially met
Starting in 2007, establish six new marine protected areas under the <i>Oceans Act</i> by 2012	Since 2007, the Department has established only two MPAs (Bowie Seamount and Tarium Niryutait) and is currently working on eight potential MPAs.	Not met
Parks Canada		
Complete feasibility assessments for two potential national marine conservation areas by 2012	Parks Canada did not complete any feasibility assessments from 2010 to the end of our audit period.	Not met
Develop a national zoning framework for the national marine conservation area program by 2012	Parks Canada now aims to complete the zoning framework by 2013, according to its current Corporate Plan.	Not met

Conclusion

- 3.72 Although important work is being done to identify marine ecosystems that require protection, we concluded that Fisheries and Oceans Canada and Parks Canada have not planned, established, and managed a network of marine protected areas (MPAs) in accordance with their legislative mandates and policies and good practices in order to conserve and protect Canada's marine biodiversity and fulfill Canada's international targets under the Convention on Biological Diversity. As a consequence, Canada's marine biodiversity remains at risk. By extension, the prosperity of many coastal communities in Canada with marine-based economies also remains threatened.
- 3.73 Significant work remains to be done by both entities. Fisheries and Oceans Canada must complete a national MPA network plan for Canada, which will involve identifying what has been done by other federal and provincial authorities, and what remains to be done to establish functioning MPA networks in the 13 bioregions, including its own contribution to those networks. For its contribution to a national network, Parks Canada must select candidate sites in 15 additional marine regions and establish MPAs in 26 of its 29 marine regions where it has not already done so.
- 3.74 Continual improvement of management practices and processes will enhance the government's ability to conserve and protect Canada's marine biodiversity and monitor the effectiveness of its MPAs in achieving planned results. However, given the marked decline in marine productivity and the low level of marine protection in Canada, the slow rate of progress that has been made over the past two decades to establish a national network of MPAs is an issue that needs to be addressed. There is a need to learn from experience and explore innovative approaches, such as those applied in other jurisdictions. There is also a need to determine whether the human and financial resources being allocated to this effort are enough to get the job done in a timely manner. At the current rate of progress, it will take many decades for Canada to establish a fully functioning MPA network and achieve the target established in 2010 under the United Nations Convention on Biological Diversity to conserve 10 percent of marine areas.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of this audit was to determine whether Fisheries and Oceans Canada and Parks Canada have planned, established, and managed a network of marine protected areas in accordance with their legislative mandates and policies and recognized good practices in order to conserve and protect Canada's marine biodiversity and fulfill Canada's international targets under the Convention on Biological Diversity.

Scope and approach

The entities examined for the audit were Fisheries and Oceans Canada and Parks Canada.

We examined the coordinating and planning activities undertaken by Fisheries and Oceans Canada in relation to the development of a national marine protected area (MPA) plan. The scope included an examination of the planning approaches used, the consultations undertaken among departments, the actual plans, and supporting documentation.

We also examined the planning activities undertaken by Fisheries and Oceans Canada and Parks Canada to develop their department plans. The scope included an examination of the planning approaches used, the actual plans, and supporting documentation.

We examined whether Fisheries and Oceans Canada and Parks Canada have developed and followed their approaches for establishing MPAs, including the three key steps in the establishment process: obtaining information for decision making, consulting key stakeholders, and designating the MPA. We focused our examination work on two of the most recently established MPAs, as they would be the most representative of recent management practices and performance.

Finally, we examined the management and monitoring of the MPAs that have been established by Fisheries and Oceans Canada and Parks Canada. We examined whether the two entities have developed management plans that reflect department guidance for the 10 MPAs that have been established for the purpose of marine protection (8 by Fisheries and Oceans Canada and 2 by Parks Canada). For more specific questions on implementation of management plans and the monitoring and reporting of results, we focused our examination on 2 MPAs that have been established for a sufficient period of time to allow the entities to have proceeded with implementation of the plans and monitoring and reporting of the results achieved.

During the course of the audit, in addition to reviewing the supporting documentation, we interviewed key individuals at headquarters and at the regional offices for the two entities. We also conducted selected interviews with key stakeholders.

Criteria

Criteria Sources

To determine whether Fisheries and Oceans Canada and Parks Canada have planned, established, and managed a network of marine protected areas in accordance with their legislative mandates and policies and recognized good practices in order to conserve and protect Canada's marine biodiversity and fulfill Canada's international targets under the Convention on Biological Diversity, we used the following criteria:

Fisheries and Oceans Canada

Fisheries and Oceans Canada has coordinated with Parks Canada and identified stakeholders to develop a national plan for a network of marine protected areas in accordance with the Department's legislative mandate and policies and recognized good practices in order to conserve and protect Canada's marine biodiversity and fulfill Canada's international targets.

(Sources: 1, 2, 3, 4, 5, and 17)

Fisheries and Oceans Canada has developed departmental plans and programs to contribute to the national network of marine protected areas in accordance with its legislative mandates and policies, and recognized good practices.

(Sources: 1, 2, 6, 7, and 8)

Fisheries and Oceans Canada has established marine protected areas in accordance with its legislative mandates and policies.

(Sources: 1, 2, 5, 6, and 9)

Fisheries and Oceans Canada is managing marine protected areas in accordance with its legislative mandates and policies.

(Sources: 6, 9, and 14)

Parks Canada

Parks Canada has developed agency-level plans and programs to contribute to the national network of marine protected areas in accordance with its legislative mandates and policies, and recognized good practices.

(Sources: 2, 4, 10, 11, and 12)

Parks Canada has established marine protected areas in accordance with its legislative mandates and policies.

(Sources: 2, 5, 10, 11, and 15)

Parks Canada is managing marine protected areas in accordance with its legislative mandates and policies.

(Sources: 10, 11, 12, 13, 14, and 16)

- 1. Oceans Act (in force in 1997)
- 2. National Framework for Canada's Network of Marine Protected Areas, Fisheries and Oceans Canada, 2011
- 3. Canada's Federal Marine Protected Areas Strategy, Government of Canada, 2005
- 4. Federal Guide for Collaborative Planning of Marine Protected Areas, Fisheries and Oceans Canada, Parks Canada, and Environment Canada, 2009
- Establishing Resilient Marine Protected Area Networks— Making it Happen, International Union for the Conservation of Nature, 2008
- Oceans Act Marine Protected Areas Policy and Operational Framework—A Practitioner's Guide, Fisheries and Oceans Canada, 2009
- 7. Identification of Ecologically and Biologically Significant Areas, Canadian Science Advisory Secretariat Ecosystem Status Report 2004/006, Fisheries and Oceans Canada
- Identification of Ecologically Significant Species and Community Properties, Canadian Science Advisory Secretariat Science Advisory Report 2006/041, Fisheries and Oceans Canada
- 9. National Framework for Establishing and Managing Marine Protected Areas, Fisheries and Oceans Canada, 1999
- 10. Canada National Marine Conservation Areas Act, 2002
- 11. Guiding Principles and Operational Policies—National Marine Conservation Areas Policy, Parks Canada, 1994
- 12. Parks Canada Agency Act, 1998
- 13. Parks Canada Guide to Management Planning, Parks Canada, 2008
- 14. Guidelines for Management Planning of Protected Areas, World Commission on Protected Areas, 2003
- 15. Canada's National Marine Conservation Areas System Plan, Parks Canada, 1995
- 16. Saguenay-St. Lawrence Marine Park Act, 1997
- 17. Convention on Biological Diversity, United Nations, 1992

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between April 2004 and April 2012, during which time several marine protected areas were established and key guiding documents—in particular, the National Framework for Canada's Network of Marine Protected Areas—were issued by the federal government. Audit work for this chapter was completed on 28 August 2012.

Audit team

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 3. The number in front of the recommendation indicates the paragraph number where it appears in the Chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation

Response

Creation of marine protected areas

3.34 Fisheries and Oceans Canada and Parks Canada should identify specific ecosystem services provided by existing and planned marine protected areas and assess their values so that Canadians and federal policy makers have better information to understand their associated benefits and costs. (3.24–3.33)

Fisheries and Oceans Canada's response. Agreed. In recognition of the complexity of the methodology to value ecosystem services and the complexity of the scientific information required for carrying out such evaluation, a case study will be undertaken to test existing methodologies and determine the types of scientific information and the level of detail required to illustrate the benefits of ecosystem services for an existing marine protected area or a common ecosystem service across existing marine protected areas. The results of the case study, along with the outcomes of the federal interdepartmental initiative entitled Measuring Ecosystem Goods and Services (MEGS) and international efforts (for example. The United Nations' System of Environmental-Economic Accounts (SEEA); The Economics of Ecosystems and Biodiversity (TEEB); The Natural Capital Project), will be used to develop guidelines to identify and assess the value of specific ecosystem services associated with marine protected areas so that Canadians and federal policy makers have better information to understand their associated benefits and costs. Fisheries and Oceans Canada will also improve its analyses to the extent possible and pursue available means to infer ecosystem service values from studies undertaken abroad. Implementation date: March 2014.

Parks Canada's response. Agreed. In the case of proposed marine protected areas, Parks Canada will continue to look at a range of impacts and benefits associated with the creation of new national marine conservation areas [Parks Canada's term for marine protected areas] as part of the establishment process. With respect to ecosystem services, Parks Canada will develop such information where it will better inform the feasibility assessment process. Such work, however, will have to rely on existing information as much as possible so as to not unduly delay the establishment process. For its existing marine

Recommendation

Response

protected areas, Parks Canada will identify ecosystem services in the development of management plans and, in particular, in zoning plans where the issue of impacts and benefits of putting in place special protection measures is best addressed.

Progress on MPAs-Fisheries and Oceans Canada

3.53 Fisheries and Oceans Canada has indicated that marine protected areas (MPAs) will be managed so that sustainable economic opportunities compatible with the conservation objectives of the MPAs will be permitted through different zoning in the MPAs. The Department should develop practical guidance on how department officials are to assess economic opportunities to determine whether they are compatible with the conservation objectives of the MPAs. (3.40–3.52)

The Department's response. Agreed. Fisheries and Oceans Canada will develop operational guidance detailing an approach for determining which activities are compatible with the conservation objectives of the marine protected area. Implementation date: March 2014.

Progress on MPAs-Parks Canada

3.70 Parks Canada should develop practical guidance on how ecologically sustainable use is to be assessed and implemented in relation to its MPAs. (3.54–3.69)

The Agency's response. Agreed. In 2012, Parks Canada established a Marine Policy unit to lead the development of guidance for the effective management of national marine conservation areas (NCMAs) [Parks Canada's term for marine protected area]. A priority for this new work unit is to formally articulate the Agency's understanding of ecologically sustainable use, a core concept with regard to the management and assessment of NMCAs. The articulation of this policy concept will subsequently form the basis for the development of national guidance for NMCA zoning, monitoring, and reporting. It will also support the NMCA establishment process by facilitating effective communications of the concept to stakeholders and partners.





Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

A Study of Federal Support to the Fossil Fuel Sector

Environmental Petitions



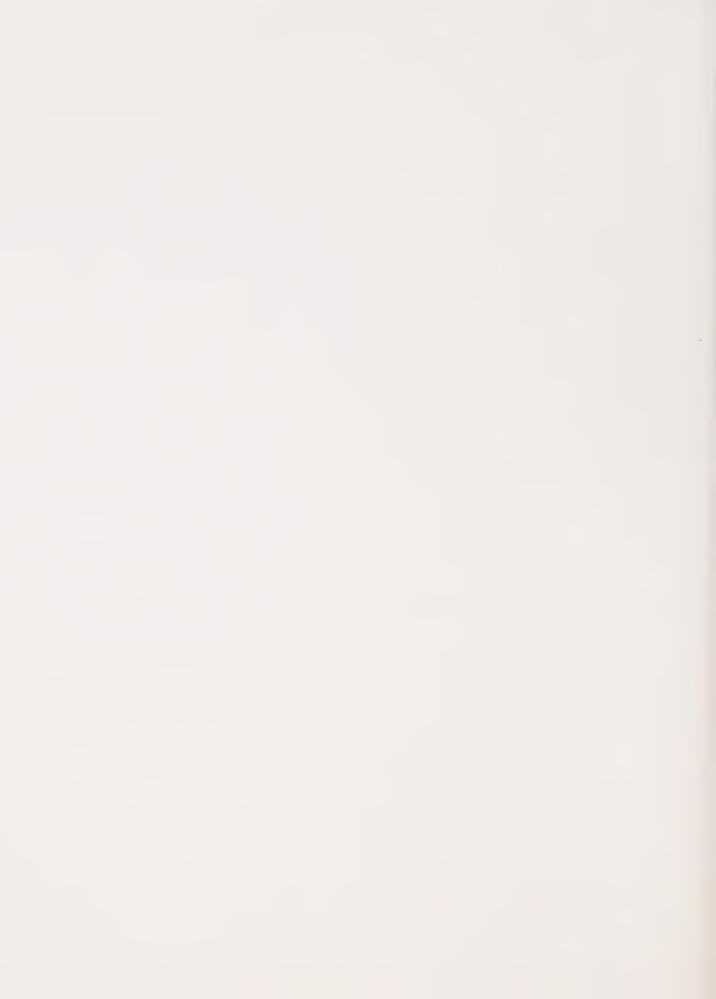


Report of the Commissioner of the Environment and Sustainable Development

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A Study of Federal Support to the Fossil Fuel Sector







Report of the Commissioner of the Environment and Sustainable Development

A Study of Federal Support to the Fossil Fuel Sector





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CHAPTER 4

A Study of Federal Support to the Fossil Fuel Sector

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A Study of Federal Support to the Fossil Fuel Sector

Main Points

What we examined

As a member of the G-20, Canada has officially recognized that efforts to deal with climate change, wasteful energy consumption, market distortions, and barriers to clean energy investment are undermined by inefficient fossil fuel subsidies.

The purpose of this study was to provide parliamentarians with information on the various means, including but not limited to subsidies, by which the government supports the fossil fuel sector, and the cost of that support. Because there is no single entity within government that is responsible for assembling a listing of government programs and activities that support the fossil fuel sector in Canada, our study undertook to compile such an inventory.

Where a program offered support to other economic sectors as well, we considered to the extent possible only the value of the support attributable to the fossil fuel sector. We also included programs that reduce carbon footprint through clean energy technology.

This document is not an audit report. For this reason, our observations should not be considered an assessment of the government's current practices. Our study did not assess the effectiveness or efficiency of the programs and activities identified or their impacts.

Our work for this chapter was completed on 28 August 2012. More details about the objectives, scope, and approach are in **About the Study** at the end of this chapter.

Why it's important

In general terms, subsidies have a direct effect on public sector budgets. Subsidies can help address market failures, respond to social needs, and encourage environmental improvements. At the same time, subsidies can also exert market and pricing distortions that can have negative impacts on environmental quality.

The Organisation for Economic Co-operation and Development has identified fossil fuel subsidies in its member nations amounting to between US\$45 billion and US\$75 billion annually between 2005 and 2010. Approximately 30 percent of that amount was received by

producers, and the majority was provided through tax expenditures. A report submitted to the G-20 noted that subsidies to producers of fossil fuels worldwide may be around US\$100 billion per year.

According to the International Energy Agency (IEA), the complete phase-out of global subsidies for fossil fuel consumption could reduce greenhouse gas emissions by 1.7 gigatonnes by 2020. This would amount to approximately 40 percent of the abatement needed to limit global warming to a 2°C rise by 2020. Although reform of fossil fuel subsidies on its own may not be sufficient to resolve climate change, according to the IEA it is a necessary step forward.

What we found

- The government has a broad range of programs that provide support to the fossil fuel sector. That support can be grouped into two main types: direct spending through various programs; and tax expenditures under the *Income Tax Act*, which represent the majority of financial support.
- Based on the data that the government provided to us, the majority (97 percent) of direct spending to support the fossil fuel sector was for research and development, more than half of which related to clean technology. Other direct spending went to economic development activities. Total direct spending amounted to \$508 million over the fiscal period 2007–08 to 2011–12. Extended over 30 years, this would represent a significant decline in direct spending support to the sector since the 30 years preceding our 2000 study of government support for energy investments.
- The costs of tax expenditures are not as easily determined as are direct expenditures, due to limitations in data availability and the methodological challenges of developing cost estimates.
- The estimated costs of tax expenditures that Finance Canada was able to attribute specifically to the fossil fuel sector amounted to \$1.47 billion over the fiscal period 2006–07 to 2010–11, primarily relating to the accelerated capital cost allowance for oil sands projects. This tax expenditure is being phased out over four years. A number of other tax expenditures are also being phased out over varying time periods. The estimated costs of tax expenditures attributable to the oil and gas, mining, and clean energy sectors as a whole amounted to about \$2 billion, accounted for largely by deductions for flow-through shares. Finance Canada was unable to estimate the proportion of this support that was attributable specifically to the fossil fuel sector. For other tax expenditures, such as the accelerated capital cost allowance for mining and Canadian exploration expenses, the Department was unable to provide an estimate of the costs.

Introduction

- 4.1 For more than a decade, the federal government has recognized the importance of improving the interaction between economic and environmental objectives. In general, the government has committed to helping ensure that fiscal and environmental objectives are complementary. For example:
 - In 2003 (in a joint response to an environmental petition), the Department of Finance Canada, Environment Canada, Industry Canada, and Natural Resources Canada noted that since the mid-1990s, direct financial support to the fossil fuel sector had fallen sharply, and that the direction of tax policy has been toward reforming the tax treatment relative to the renewable energy sector. ¹
 - In 2005, Finance Canada published A Framework for Evaluation of Environmental Tax Proposals, outlining the context and criteria that would guide the Department in evaluating options for using the tax system to pursue environmental goals and achieve sustainable development.²
 - In 2008, the *Federal Sustainable Development Act* formally recognized the interrelationship among economic, social, and environmental factors in supporting sustainable development.
 - In 2010, the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals (the federal government's official policy on strategic environmental assessments) noted that all ministers are responsible for ensuring that all their decisions fully consider the environmental implications of proposed initiatives.
- **4.2** Subsidies are one of many tools used by governments to attain economic, social, and environmental objectives. "Virtually all of the member countries of the Organisation for Economic Co-operation and Development (OECD) provide some form of government assistance to industry" for a number of reasons, including the following:
 - to alleviate market failures,
 - to reduce regional disparities,
 - to encourage the growth of small businesses⁵ and other investments, or
 - to meet other social policy objectives.

Fossil fuels—A non-renewable source of energy, including coal, oil, and natural gas. Fossil fuels have formed over millions of years through the decay, burial, and compacting of rotting vegetation on land and marine organisms on the sea floor. They are being depleted. When these fuels are burned, they produce carbon dioxide, which is a significant greenhouse gas.

In Canada, the federal government uses tools that include subsidies in the form of direct program spending, regulation, and tax measures. Exhibit 4.1 provides the context and definitions of subsidy and support as used in this chapter.

4.3 Government regulations and policies, such as subsides for developing clean energy or fossil fuels, can affect the environment and sustainable development both negatively and positively. According to the OECD, subsidies to industry often do not achieve their desired outcomes in terms of growth and productivity. Support for industry "can help sustain levels of production that are environmentally harmful in terms of polluting emissions and resource consumption." In addition, energy subsidies can be "economically costly to taxpayers and can damage the environment through increased emissions of greenhouse gas and other air pollutants." However, because many environmental improvements depend on technological change, support to industry "for research and development and environmental protection can be environmentally beneficial." 10

Exhibit 4.1 Definitions of subsidy and support

Canada is a member of various international organizations that have attempted to define the term "subsidy," including the International Energy Agency (IEA), the Organisation for Economic Co-operation and Development (OECD), The World Bank, and the World Trade Organization (WTO). While the definitions continue to evolve, this study highlights two principal definitions that have gained wide acceptance in international law and economics—the WTO's definition of subsidy and the OECD's definition of support.

The WTO, in the Agreement on Subsidies and Countervailing Measures, states the accepted international definition of a **subsidy** as a financial contribution by a government that confers a benefit.

A subsidy exists where

- · government provides a direct or indirect transfer of funds,
- · revenue is forgone or not collected,
- · government provides goods or services or purchases goods, or
- · government provides income or price support.*

Canada and other WTO members are legally bound to this definition through international treaty law and domestic implementing legislation. In addition, several complex legal cases under the WTO and North American Free Trade Agreement dispute settlement processes have provided further interpretations of this definition. These cases have prompted several experts to try to apply this definition to real-world scenarios.

It the i Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, the IEA, the Organization of the Petroleum Exporting Countries (OPEC), OECD, and The World Bank note the limited practical applicability of the WTO definition, due to many factors.** Supplementing the WTO definition, the OECD defines **support** as gross transfers from taxpayers to industry arising from a government's policies.

- Sources: * World Trade Organization, Agreement on Subsidies and Countervailing Measures, Part 1: General Provisions, Article 1, 1.1, http://www.wto.org/english/docs_e/legal_e/24-scm_01_e.htm
 - ** IEA, OPEC, OECD, The World Bank, Joint Report: Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, Prepared for submission to the G-20 Summit Meeting, Toronto (Canada), 26-27 June 2010, http://opec.org/opec_web/static_files_project/media/downloads/publications/OPECIEA_OECDWB_Joint_Report.pdf

- 4.4 The relationship between subsidies available to the energy sector and their effect on GHG emissions is complex. However, in general terms, reducing the relative price of fossil fuels can increase consumption, which can result in increased GHG emissions.
- 4.5 The production and consumption of fossil fuels are the main sources of human-induced GHG emissions. According to the International Energy Agency (IEA), the complete phase-out of global subsidies for fossil fuel consumption could reduce GHG emissions by 1.7 gigatonnes by 2020. This would amount to over 40 percent of the abatement needed to be on track to limiting global warming to a 2°C rise by 2020.
- **4.6** Although the reform of fossil fuel subsidies on its own may not be sufficient to mitigate climate change, it is, according to the IEA, a necessary step forward.

International commitments

- **4.7** At the September 2009 G-20 summit in Pittsburgh, member countries noted in the Leaders' Statement that "inefficient fossil fuel subsidies encourage wasteful consumption, distort markets, impede investment in clean energy sources and undermine efforts to deal with climate change." ¹¹
- 4.8 The G-20 leaders committed to rationalizing and phasing out, over the medium term, "inefficient fossil fuel subsidies that encourage wasteful consumption." They also recognized the importance of providing support for clean energy, renewable energy sources, and technologies that dramatically reduce GHG emissions. ¹³.
- 4.9 Inefficient subsidies. The Leaders' Statement did not define "inefficient subsidies" but left it to each of the member countries to do so. Identifying which fossil fuel subsidies may be "inefficient" requires understanding the circumstances within each country, and the impact of different subsidies. Acknowledging that a particular energy subsidy affects the production or consumption of a fossil fuel does not automatically mean that it is inefficient or leads to wasteful consumption. Well-implemented subsidies can help address market failures or respond to social needs. A subsidy's design, administration, and interaction with other government policies determine to what extent it is socially and environmentally harmful and how urgently it might need to be phased out. 17

Intangible capital —Assets that are not physical in nature but are still valuable to a corporation. They are treated like tangible capital assets, such as equipment, which have a physical form. Both types of capital assets are depreciable. A corporation can deduct costs relating to intangible capital assets from its

life. In the context of the fossil fuel sector, intangible capital assets may include costs related to the discovery of new resource deposits, clearing land, and drilling wells.

Tax expenditures — Special measures, such as low tax rates, exemptions, deductions, deferrals, and credits, used by the government to achieve public policy objectives through the tax system. Tax expenditures are often used as alternatives to direct spending and to achieve economic and social policy objectives at the cost of lower tax revenue.

- 4.10 At the June 2010 G-20 summit in Toronto, the G-20 members submitted national implementation strategies and timetables for reducing or phasing out inefficient fossil fuel subsidies. Canada's implementation strategy focused on several tax reforms that had been announced in budgets before 2009, such as the phase-out of the accelerated capital cost allowance for oil sands projects (see paragraph 4.83). Canada committed to continuing to review its policies to ensure that the policies provide an internationally competitive economic environment and achieve their goals efficiently. ¹⁸
- **4.11** Budgets in 2011 and 2012 contained additional reforms supporting Canada's G-20 commitments, such as phasing out the Atlantic Investment Tax Credit for oil and gas and mining, and aligning the deduction rates for **intangible capital** expenses in oil sands projects with those available in the conventional oil and gas sector.
- **4.12** In 2012, Canada agreed with other members of the Asia–Pacific Economic Cooperation to reaffirm their commitment to "rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption." ¹⁹
- 4.13 To support work on reforms to fossil fuel subsidies, the G-20 leaders directed the OECD, IEA, the Organization of the Petroleum Exporting Countries (OPEC), and The World Bank to prepare a joint report on fossil fuel subsidies. Reports, released in June 2010 and November 2011, noted that subsidies to producers of fossil fuels may be in the order of US\$100 billion per year worldwide, and that the value of support to fossil fuel production in OECD member countries was estimated to be between US\$45 and US\$75 billion annually between 2005 and 2010. Most of the support mechanisms identified were tax expenditures.
- 4.14 The reports also noted that subsidies for consumption in developing countries were estimated at US\$557 billion in 2008 and US\$409 billion in 2010. According to the OECD, support for consumption accounts for less than 20 percent of fossil fuel support in Canada.

Previous work by the Commissioner of the Environment and Sustainable Development

4.15 In 2000, a study by the Commissioner of the Environment and Sustainable Development (the Commissioner)—Government Support for Energy Investments—examined direct federal spending, federal regulations, and the use of the tax system to support energy investments. The study noted that between 1970 and 1999, Canadian direct federal

spending on energy production from fossil fuels was \$40.4 billion, but that support provided through the tax system could not be estimated.

- **4.16** The Commissioner's 2000 study examined three categories of tax expenditures available to the oil and gas and mining sectors:
 - · accelerated deductions.
 - flow-through shares: and
 - the resource allowance for the non-deductibility of Crown royalties and mining taxes.

Overall, the study found that, with a few exceptions, federal government support for energy investments, including support through the tax system, did not particularly favour the non-renewable sector over the renewable sector. The exceptions included investments in oil sands and coal mines, where significant tax expenditures were available. Paragraph 4.83 provides more information on these tax expenditures available to the fossil fuel sector.

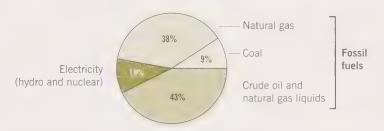
- **4.17** The 2000 study cautioned that estimating total federal tax expenditures is complex, partly due to methodology issues and data gaps. For example, the estimation of tax expenditures must take into account the unique tax situation of each company. In addition, providing aggregate estimates with a reasonable degree of accuracy can be extremely labour intensive and requires isolating data specific to each project and corporation.
- 4.18 The study found that Finance Canada was not collecting data needed to estimate total tax expenditures related to accelerated deductions for the oil and gas sector. Finance Canada has noted that no widely accepted method exists for estimating these tax expenditures. The study encouraged the Department to explore other ways to estimate the total cost of tax expenditures, including accelerated deductions.
- 4.19 In 2004, the Commissioner conducted an audit that examined how the government uses the tax system to achieve its sustainable development commitments. The audit identified gaps in the assessment of the environmental impacts of tax expenditures. Finance Canada noted its commitments to continue to evaluate research concerning environment-related tax expenditures and to assess the potential for using the tax system to help the government meet its environmental objectives. A Framework for Evaluation of Environmental Tax Proposals, published in 2005, outlines the criteria for evaluating environmental tax proposals.

4.20 This current study by the Commissioner provides an opportunity to update estimates of federal support provided by both direct and indirect (tax expenditures) spending to the fossil fuel sector for the fiscal years 2006–07 to 2011–12.

Canada's fossil fuel sector

4.21 Canada has substantial and diversified fossil fuel resources, and is an exporter of oil, natural gas, and coal. ²⁰ Fossil fuels account for 90 percent of primary energy supply in Canada. Exhibit 4.2 illustrates the production of primary energy by source.

Exhibit 4.2 In 2010, fossil fuels accounted for most of the primary energy production in Canada



Source: Statistics Canada, Table 128-0016, Supply and demand of primary and secondary energy in terajoules, CANSIM (database)

- **4.22** Canada is the third-most oil-rich nation in the world (after Saudi Arabia and Venezuela), with most of its oil found in the Alberta oil sands. Advances in technology hold considerable potential for increasing Canada's oil resources.
- 4.23 Oil sands production has grown rapidly in recent years, offsetting a decline in the production of conventional oil. ²¹ The National Energy Board baseline projection of the most likely outcome for Canada's energy future is for oil production to double by 2035, at which time oil sands production will account for 85 percent of the country's total oil production, compared with 54 percent in 2010.
- 4.24 The fossil fuel sector employed about 200,000 people in Canada and generated \$62 billion in 2011, accounting for 8 percent of Canada's nominal gross domestic product. Fossil fuel exports totalled more than \$114 billion. In 2011, about 480,000 cubic metres of crude oil a day and about 400 million cubic metres of natural gas a day were produced; more than half of this production was exported.

4.25 In 2010, the energy sector produced 81 percent of Canada's GHG emissions. In 2010, Canada represented 3.1 percent of global energy production, 2.3 percent of energy demand, and 1.8 percent of CO₂ emissions from fuel combustion.

Recent attempts at estimating support

- **4.26** While the methodologies used to measure subsidies are also evolving, certain approaches have gained general acceptance among experts. For example, the OECD's Producer Support Estimate Manual includes a well-established approach for use in the agricultural sector, and the Organisation has adopted this approach in measuring fossil fuel subsidies. Other attempts to catalogue methodologies include the following documents:
 - Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, jointly published in 2010 by IEA, OPEC, OECD, and The World Bank; and
 - Subsidy Estimation: A Survey of Current Practice, published in 2010 by the Global Subsidies Initiative (GSI) of the International Institute for Sustainable Development.
- 4.27 Recent studies by the OECD in 2011 and GSI in 2010 have attempted to estimate the value of Canadian federal support to the fossil fuel sector. These studies identified a number of challenges related to how the estimates were calculated. These challenges led to different methodologies for estimating subsidies, and to results ranging from \$1.38 billion in a single year to \$1.54 billion over three years.
- 4.28 In 2011, the OECD published its Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels for 24 OECD member countries, including Canada. The report found that many of the tax incentives available to the oil and gas and mining sectors have been reformed. At the same time, the study concluded that several tax expenditures supporting energy production remain in place. The OECD inventory identified nine support measures available to producers from the federal government, eight of which were provided through the tax system and were identified in Finance Canada's tax expenditure reports. The OECD inventory also noted that estimates for some of the tax expenditures identified were not available.

- 4.29 The OECD has acknowledged a number of caveats related to its methodology, underscoring the complexity of estimating the aggregate value of individual subsidies. The inventory included support measures identified by the responsible governments; however, due to differences in defining benchmarks, the estimates are not comparable across countries (for more information on expenditures and benchmarks, see paragraph 4.42). Also, due to the potential for interaction among tax expenditures, simply adding up the values of individual measures does not necessarily result in an accurate estimate of the total value of tax expenditures.
- **4.30** A 2010 paper entitled The Myths and Facts of Fossil Fuel Subsidies: A Critique of Existing Studies noted a number of weaknesses in the methods used to analyze the magnitude of subsidies. In particular, the authors cite
 - the use of a definition of "subsidy" that had been designed for the multilateral trade regime rather than for domestic subsidy assessments;
 - the failure to account for the interdependence between tax expenditures and royalties; and
 - the lack of robust economic frameworks, including economic models capable of capturing the dynamic interplay among different measures.²²

Specificity principle

- 4.31 Both the World Trade Organization definition of a "subsidy" and the OECD definition of "support" apply the specificity principle, which states that to be included, a measure must be available only to one organization or group of organizations. It is designed to focus on measures that provide preferential treatment to a specific sector or industry over others.
- 4.32 For example, because fossil fuel extraction accounts for most of the output of the Canadian mining sector (including oil and gas extraction), the OECD considered some tax expenditures available to the mining sector as a whole to be specific enough to warrant inclusion as support to the fossil fuel sector. However, the OECD excluded other tax expenditures available to a wider array of sectors because they do not provide preferential treatment to the fossil fuel

sector over other sectors. The OECD did not, for example, include the Atlantic Investment Tax Credit because it is available to a range of sectors, including logging, farming, fishing, and manufacturing, in addition to mining.

4.33 In order to compile a broad list of support to the fossil fuel sector and to ensure that all forms of support to the sector are included, this study did not apply the specificity principle. For the purpose of this study, we included direct spending programs available to the fossil fuel sector regardless of their availability to other economic sectors, and tax expenditures available to a group of sectors that included mining and clean energy. To the extent possible, we included only the value of support that was attributable to the fossil fuel sector.

Focus of the study

- **4.34** We undertook this study to inform parliamentarians about the federal government's support to the fossil fuel sector. Reform of fossil fuel support is a necessary step forward in mitigating climate change. The study adopts an inventory approach similar to that used by the OECD in its Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels. In particular, the study uses the OECD term "support," which avoids confusion between the everyday use of the term "subsidy" and its meanings in specific economic and legal contexts.
- 4.35 No single entity within the federal government is responsible for assembling a comprehensive list of government programs that provide support for the fossil fuel sector. This study aimed to compile a broad list of federal government programs and activities that support this sector and to outline the budgetary impacts of those programs and activities. We examined only federal support to fossil fuel production. We did not assess the impacts of the programs and activities on GHG emissions or the effectiveness or efficiency of the identified programs and activities.
- **4.36** The financial data collected concerning direct expenditures covered the period 2007–08 to 2011–12. However, the tax expenditure data covered the period 2006–07 to 2010–11, because estimates for the 2011–12 fiscal year were not available when we were completing our work.

Observations

Categories of support

4.37 Based on the studies and methodologies referred to in the introduction, we developed a framework for the support we identified. Support was first broken down into three types: direct spending, tax expenditures, and government-provided goods and services. We then broke down direct spending into two categories—economic development, and research and development—each of which was further broken down into objectives.

Direct spending

- 4.38 Direct spending involves disbursements of government funds to provide direct financial support to a specific company or industry. This spending includes contributions and payments to non-governmental organizations (NGOs), non-profit organizations, or private companies. Programs in this category are the easiest to identify and understand, and are the most transparent when determining the level of financial support.
- **4.39** Economic development. This category of direct spending is intended to support the economic development of businesses, industries, and communities. It is divided into three objectives:
 - Small and medium enterprise development. Funding for this objective focuses on enhancing the capacities of small and medium enterprises. Recipients are individual companies. This form of support provides contributions that allow businesses to hire new personnel, fill skills gaps, expand facilities or operations, and develop new competencies.
 - Training. Under this objective, the government supports education and training. It provides funding to post-secondary institutions for programs to help students acquire the skills they need to contribute to the fossil fuel sector. It also funds other organizations that offer programs to provide people with the skills they need to find jobs in the sector. Such programs often focus on the economic health of a community or group.
 - Industry development. Funding for this objective supports industries or groups of companies, rather than specific companies. It provides non-profit groups or industry associations with funds to support activities, such as enhancing export trade, developing sector strategies, or expanding the industry.

made to individuals or organizations that are based on a contribution agreement.

- **4.40** Research and development. This category of direct spending supports the fossil fuel sector as a whole, and includes payments and contributions to institutions (such as universities and industrial associations) and private enterprises. It includes funding for both third party and government-conducted research under the following objectives. Case Study 1 provides an example of direct spending related to research and development objectives.
 - Basic research. This support focuses on gaining more comprehensive knowledge about fossil fuels. It can include research into potential new resources, such as gas hydrates, or research into how resources interact with the environments around them.
 - Exploration and extraction. This support focuses on upstream industrial activities, such as finding and developing new resource deposits. Research involves developing better techniques for identifying deposits and reservoirs, accessing deposits and developing sites, and extracting the resource from the ground.
 - **Production and transportation.** This support focuses on research into midstream industrial activities, including processing, storing, and transporting commodities. Processing includes refining the raw resource into a consumable commodity. Although commodities are transported by road, rail, and pipeline, the research focuses primarily on pipelines.
 - Clean technology. Support for research in this area focuses on reducing the industry's carbon emissions and environmental footprint. Research involves investigating ways to reduce the emissions intensity of upstream and midstream activities, such as

Case Study 1—Example of direct spending on research and development

Atlantic Innovation Fund

The Atlantic Canada Opportunities Agency (ACOA) supports projects across the spectrum of research and development, although it does not have any programs specific to the fossil fuel sector.

Through the Atlantic Innovation Fund (the Fund), universities in Atlantic Canada received \$15 million to support research and development for fossil fuel production. This included \$12 million for exploration and extraction projects such as seismic modelling, simulation software, and magnetic resonance imaging (MRI) measurements to identify new reservoirs. The Fund also supported other projects, including research into ultraclean diesel.

ACOA has also funded research by private corporations and research institutes. In total, it provided \$6.3 million for projects such as risk mitigation strategies for subsea infrastructure, and engineering technologies for resource markets.

- carbon capture and storage (see the Case Study on page 22) and new ways to use fossil fuels that produce fewer emissions.
- Reclamation and remediation. Support for this type of research focuses on the impacts that fossil fuel extraction has on land and water. Reclamation involves restoring extraction and production sites to their original conditions. Remediation is the removal, reduction, or neutralization of substances, wastes, or hazardous material from a site to prevent or minimize any adverse environmental effects.

Tax expenditures

- **4.41** The principal function of the tax system is to raise the revenues necessary to fund government spending. The tax system can also achieve public policy objectives by using tax expenditures.²⁴
- 4.42 Tax expenditures are deviations from a benchmark. A benchmark tax structure represents what might be considered "normal" or "neutral" taxation of income and consumption. According to the OECD, special tax provisions intended to address policy objectives may be considered deviations from the benchmark. However, the line between what is normal and what is special is often not a clear one, ²⁵ as outlined in Exhibit 4.3.
- 4.43 Tax expenditures can include tax credits, exemptions, rate reductions, deductions, deferrals, rebates, and carry-overs. They result in reduced taxes payable by the beneficiaries. Tax expenditures can have an impact on the amount and timing of tax revenues that the government receives. Some of the federal government's tax expenditures are targeted specifically at resource sectors, including fossil fuel producers.
- 4.44 The primary challenge in any analysis of tax expenditures is to identify the reference point—the benchmark tax structure—against which to establish the nature and extent of any tax expenditures. There are a number of approaches to defining the benchmark, which vary among countries. Differences in what is included in the benchmark result in differences in what is identified as a tax expenditure. Finance Canada takes a broad approach, considering only the most fundamental structural elements of the tax system to be part of the benchmark.

Government-provided goods or services

4.45 Providing goods or specialized services for free, or at a price below market value, is another category of support. These services can include advocacy, promotion, and outreach.

4.46 Advocacy, promotion, and outreach. Foreign Affairs and International Trade Canada carries out advocacy activities that include the systematic promotion and defence of Canadian investments abroad. It also engages in trade promotion, helping Canadian suppliers of services, technologies, and equipment sell to foreign buyers and open new markets. Natural Resources Canada conducts outreach designed to provide knowledge and tools related to oil sands issues to the general public and decision makers in foreign countries, with the goal of preventing and addressing market access issues.

Exhibit 4.3 Understanding benchmark tax systems

Tax expenditures are estimated by identifying aspects of the tax system that deviate from a benchmark—also known as a reference, efficient, or ideal—tax system. A benchmark establishes a theoretical set of basic rules that would apply to all actors in an economy, and defines the tax base to which those rules would be applied. How the benchmark is defined will affect both what is identified as a tax expenditure and the estimated size of the expenditure.

There is no international consensus about which benchmark tax system should be used. Two common benchmark systems are

- the income base, where all income (such as labour, dividends and interest, capital gains, and gifts) is taxed; and
- the consumption base, which taxes spending rather than earnings (such as a sales tax).

Depending on the benchmark, the actual tax system will deviate more or less from the theoretical system it is compared to, affecting which tax measures are identified as expenditures.

The results of using different benchmarks

The capital cost allowance (CCA) is a good example of how different benchmarks can result in different tax expenditure estimates. The CCA applies to depreciable property—property that wears out over the years, such as cars, farm equipment, and business machines—that is used to earn income.

Under a consumption base, the costs of such property would be deducted from the tax base immediately. Under an income base, however, the value of the property represents real wealth, and only the value lost in any year is deducted from taxable income. The CCA is the actual amount Canadians are allowed to deduct from their tax base in any year.

Under an income base, the CCA is not considered a tax expenditure: it matches the benchmark because it allows Canadians to deduct only the lost value of an asset in any year. Under a consumption base, however, the CCA is considered a **negative tax expenditure:** the government collects more revenue because Canadians are not able to deduct the entire cost in that year.

An accelerated CCA (ACCA) is an exception to the rule, allowing some assets to depreciate more quickly. Under the income tax benchmark used by Finance Canada, ACCA is a **positive tax expenditure:** by allowing Canadians to deduct more from their taxable income in the early years of an asset's useful life, it reduces the revenue collected by the government in those years. However, under a consumption base, an ACCA is actually closer to the theoretical benchmark and reduces the negative tax expenditure. Canadians can deduct more of the value of an asset immediately.

- **4.47** These activities include participating in conferences and round tables, and developing and disseminating advocacy materials and fact sheets.
- 4.48 Because only a portion of the federal government's advocacy, promotion, and outreach activities is directed toward fossil fuels, it can be difficult, if not impossible, to isolate the portion of spending specifically attributable to the fossil fuel sector. Thus, advocacy, promotion, and outreach activities are not included in the information on government support presented in the next section.

Support through direct spending

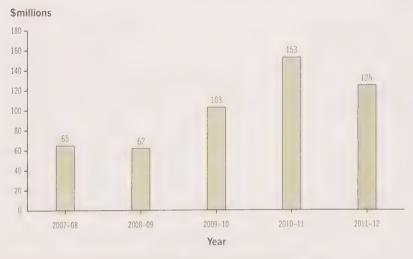
- 4.49 In order to provide parliamentarians with information about how the government supports the fossil fuel sector and about the value of that support, we identified 10 departments and agencies that provide support to the sector.
- **4.50** We asked each department and agency to identify the type of programs and activities that support the fossil fuel sector, referring to the types outlined in the previous section. The organizations identified a broad variety of programs and activities. Because this is a study, we did not audit the information we received from them; however, we reviewed it for reasonability and completeness.
- 4.51 Based on project descriptions provided by the entities, we broke down direct spending into economic development and research and development (as previously noted). This was done to develop a better understanding of the objectives of the government programs that provide direct support. In some cases, the categorization is an approximation because some programs contribute to a number of objectives.
- **4.52** Of the 10 departments and agencies we examined, 9 provide support to the fossil fuel sector through direct spending. Exhibit 4.4 lists the value of that support, as provided to us by the organizations involved in this study.
- 4.53 Exhibit 4.5 highlights support on an annual basis, demonstrating the variability from year to year. The increase in support in 2009–10 and 2010–11 is virtually all attributable to Natural Resource Canada's support for carbon capture and storage projects. The decrease in support in 2011–12 reflects a reduction in its funding for such projects.
- 4.54 Exhibit 4.6 illustrates the government's support through direct spending classified by category and objectives.

Exhibit 4.4 Direct spending support to the fossil fuel sector, by department and agency, for the 2007–08 to 2011–12 fiscal years

	Direct spending (\$millions)		
Departments and agencies	Economic development	Research and development	
Natural Resources Canada	nna	313.8	
Natural Sciences and Engineering Research Council	-	70.9	
National Research Council	-	28.3	
Atlantic Canada Opportunities Agency	4.5	21.4	
Industry Canada	-	24.1	
Sustainable Development Technology Canada	-	23.7	
Western Economic Diversification Canada	9.1	9.6	
Canadian International Development Agency	2.4	_	
Foreign Affairs and International Trade Canada	-	0.2	
Total	16	492	
Combined total	508		

Source: Based on unaudited information provided by the departments and agencies

Exhibit 4.5 Direct spending support by year



Source: Based on unaudited information provided by the departments and agencies

Economic development

Total: 508

Research and development

Reclamation and remediation 12.6

Basic research 113.5

Exploration and extraction and extraction 35.4

Exhibit 4.6 Direct spending support for the 2007-08 to 2011-12 fiscal years (\$millions)

2.1

7.1

Total: 16

Source: Based on unaudited information provided by the departments and agencies

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4.55 This section describes the programs and activities identified as direct spending support to the fossil fuel sector by 9 of the 10 departments and agencies. The descriptions include the amount of support the entities provided for the period 2007–08 to 2011–12. Support provided by Finance Canada through the tax system is presented in the section Support through tax expenditures.

Production and

Clean technology 281.2

Total: 492

transportation

49.3

Natural Resources Canada

- **4.56** Natural Resources Canada conducts innovative scientific research and is an established leader in science and technology in the fields of energy, forests, and minerals and metals.
- **4.57 Research and development.** Natural Resources Canada provided the following funding:
 - \$88 million for basic research to fill knowledge and technological gaps aimed at reducing environmental risks from fossil fuel production;
 - \$10.1 million for research to improve production and transportation of fossil fuels; and
 - \$215.7 million for clean technology research such as carbon capture and storage. This support went to academic institutions such as the Institute for Sustainable Energy, Environment and Economy (ISEEE) at the University of Calgary; research associations such as the Carbon Capture and Storage Research Consortium of Nova Scotia; and federal science-based departments and agencies.

Natural Sciences and Engineering Research Council

- **4.58** The Natural Sciences and Engineering Research Council (NSERC) is an important funder of direct costs of research in the natural sciences and engineering at Canadian universities and colleges.
- 4.59 Research and development. Through peer-reviewed funding across a variety of sectors, NSERC provided a total of \$70.9 million for research on fossil fuels. Research projects in the oil sands included restoration and remediation of surface mining sites, and the search for better ways to remove unwanted solids from oil wells and for substances that speed up chemical reactions to help extract more oil from the oil sands. Projects in other areas included research to provide the mining industry with better information to help it find and exploit new deposits, training for students wishing to work in the industry, and support to increase Canada's competitive advantage in the mining sector. NSERC's support for research and development broke down as follows:
 - \$6.4 million for basic research.
 - \$26.2 million for production and transportation,
 - \$9.9 million for research into exploration and extraction,
 - \$17 million for clean technology, and
 - \$11.4 million for reclamation and remediation.

National Research Council

- **4.60** The National Research Council (NRC) is a government research organization responsible for undertaking scientific and industrial research, publishing and selling scientific and technical information, and providing scientific and technological services to the research and industrial communities.
- **4.61** Research and development. Within the life sciences and frontier sciences areas, the National Research Council conducted research under the following objectives:
 - \$2.8 million for basic research,
 - \$2.9 million for clean technology research, and
 - \$883,000 for reclamation and remediation.
- 4.62 Most of NRC's fossil fuel research was related to engineering activities that fell across a variety of research objectives, and was conducted by the Industrial Materials Institute, the Institute for

Fuel Cell Innovation, and the Institute for Chemical Process and Environmental Technology (Case Study 2). This accounted for \$21.7 million, or 77 percent of NRC's total expenditures on fossil fuels.

Case Study 2—Government-conducted research in oil sands

The National Research Council (NRC) engages in a variety of research activities. In particular, the Institute for Chemical Process and Environmental Technology's Oil Sands project focuses on existing and emerging technologies for recovering and upgrading bitumen from oil sands. The project includes research on chemistry fundamentals, refining, and fuel use, as well as sustainability and social impacts. The institute had internationally recognized expertise, and often worked with industrial partners and clients. NRC spent nearly \$13 million on the OILS project between 2007 and 2012, and more than \$28 million on fossil fuel projects overall.

Atlantic Canada Opportunities Agency

- **4.63** The Atlantic Canada Opportunities Agency (ACOA) strives to create opportunities for economic growth in Atlantic Canada through enterprise and community development, as well as advocacy at the national level.
- **4.64** Research and development. Over 80 percent of ACOA's support to the fossil fuel sector was provided to 13 projects through the Agency's Atlantic Innovation Fund. This support included
 - \$2.1 million for basic research,
 - \$18.4 million for research into exploration and extraction, and
 - \$933,000 for production and transportation.
- **4.65** Fossil fuel projects included research into applications of wireless systems in the petroleum industry, the use of magnetic resonance imaging (MRI) to analyze petroleum reservoirs, and the production of ultraclean diesel. Support provided by ACOA to universities was highlighted in the Case Study on page 13.
- 4.66 Economic development. The Business Development Program and Entrepreneurship and Skills Development Program fund projects in a variety of economic sectors. In the fossil fuel sector, these included projects to expand marine and offshore operations, purchase equipment and infrastructure, fund staff training on new equipment, and develop in-house engineering expertise and pipeline capabilities. In total, these programs provided \$4.5 million in small and medium enterprise development funding.

Industry Canada

- **4.67** Industry Canada works to improve conditions for investment, improve Canada's innovation performance, increase Canada's share of global trade, and build a fair, efficient, and competitive marketplace.
- 4.68 Research and development. Through the Technology Partnerships Canada program, Industry Canada provided \$1.5 million to support exploration and extraction. Industry Canada also manages funding agreements with the Canada Foundation for Innovation and Genome Canada, which are independent non-governmental organizations responsible for allocating funding according to objectives outlined in their funding agreements. These agreements supported research and development as follows:
 - \$7.5 million for basic research.
 - \$448,000 for production and transportation,
 - \$960,000 for research into exploration and extraction,
 - \$6.6 million for clean technology, and
 - \$368,000 for reclamation and remediation.
- **4.69** Research areas included unconventional sources of oil and gas, such as the oil sands, and greener production and extraction of fossil fuels.
- 4.70 Industry Canada also manages a funding agreement providing a one-time grant to the Canada School of Energy and Environment located in Calgary, which included \$6.75 million supporting the fossil fuel sector. This funding aimed to enhance collaboration and knowledge dissemination in energy and environmental research, and to facilitate technology transfer and commercialization by funding proof of principle projects (early research products being moved into application or commercialization).

Sustainable Development Technology Canada

4.71 Sustainable Development Technology Canada (SDTC) focuses on adding sustainability to Canada's fossil fuel sector. To this end, it operates two funds that focus on developing and demonstrating new technologies as they prove their viability in full-scale, real-world situations. The SD Tech Fund supports projects that address climate change, air quality, clean water, and clean soil. The NextGen Biofuels Fund supports the establishment of large demonstration-scale facilities

for the production of renewable fuels. We did not include the latter fund in this study because biofuels were outside its scope.

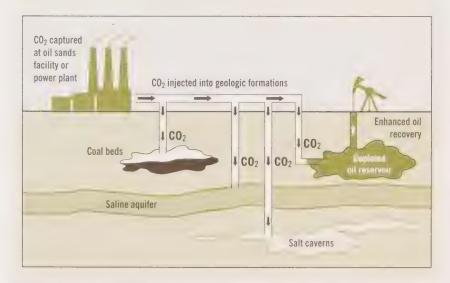
4.72 Research and development. SDTC provided \$23.7 million in support to the fossil fuel sector through a variety of clean technology projects. Carbon capture and storage, enhanced oil recovery methods (Case Study 3), and technologies to better identify gas leaks are examples of the types of projects SDTC has funded.

Case Study 3—Government-conducted research in carbon capture and storage

A significant amount of the research and development funding identified in this study was directed toward carbon capture and storage (CCS). CCS is a process for capturing carbon dioxide (CO₂) emitted from facilities and injecting it into geologic formations to prevent its release and accumulation in the atmosphere. CCS can be applied to facilities such as coal-fired power plants and oil and gas processing facilities.

A number of departments and agencies are involved in CCS development. One of every five projects in Sustainable Development Technology Canada's oil and gas portfolio is a CCS project. At Natural Resources Canada, \$215 million—nearly 70 percent of the research and development funding supporting the fossil fuel sector—involved CCS.

The Intergovernmental Panel on Climate Change estimates that CCS could be responsible for 15 to 55 percent of global greenhouse gas (GHG) reduction efforts this century. The International Energy Agency has identified CCS as a significant emissions reduction option, noting a strong economic case to invest in CCS technology. CCS research contributes to the shift to a green economy in Canada. CCS benefits the fossil fuel sector by helping reduce the sector's GHG emissions; this helps Canada balance its continued use of fossil energy with efforts to reduce GHG emissions. Research into CCS also includes using the captured CO_2 to enhance oil recovery by pumping it into depleted wells to force out more oil or gas.



Western Economic Diversification Canada

- 4.73 Western Economic Diversification Canada was established to improve the long-term economic competitiveness of western Canada. Its programs support a wide range of initiatives, including innovation and research, business development, and community economic development.
- 4.74 Economic development. Through programs such as the Western Economic Partnership Agreements and the Canada Saskatchewan Northern Development Agreement, Western Diversification Canada provides contributions to small businesses, universities, research institutes, and industry associations. The Western Diversification Program is the main program through which the organization makes investments in the economy. In all, the Department provided support to the fossil fuel sector amounting to \$2.3 million for small and medium enterprise development, \$2.1 million for training, and \$4.7 million for industry development.
- **4.75** Research and development. Through its various programs, Western Diversification Canada also supports research and development. Most of this funding is provided through Western Economic Partnership Agreements, which are multi-year federal—provincial funding commitments. Support for research and development in the fossil fuel sector through these agreements and other programs totalled
 - \$2.8 million for basic research,
 - \$1.3 million for exploration and extraction,
 - \$863,000 for production and transportation, and
 - \$4.6 million for clean technology.

Canadian International Development Agency

- **4.76** The Canadian International Development Agency (CIDA) funds international development programs and projects through contributions to Canadian and international institutions. It also enters into contracts with Canadian companies to provide assistance in implementing programs and projects.
- **4.77 Economic development.** Through a single project, CIDA provided a Canadian industry association with \$2.4 million to help governments of developing countries better manage their fossil fuel sectors.

Foreign Affairs and International Trade Canada

- **4.78** Foreign Affairs and International Trade Canada supported the fossil fuel sector through direct spending related to research and development.
- 4.79 Research and development. The Global Opportunities for Associations program contributed money to support national associations carrying out new or expanded international collaborations in research and development, for the benefit of the entire industry. Foreign Affairs and International Trade Canada also provided grants through the International Science and Technology Partnerships Program (ISTPP) and the Going Global Innovation program. Through these programs, the Department provided
 - \$53,500 for basic research,
 - \$77,000 for production,
 - \$15,000 for reclamation and remediation, and
 - \$65,000 for clean technology.

Support through tax expenditures

Department of Finance Canada

- 4.80 The aspects of the Department of Finance Canada's mandate most relevant to this study include developing tax policies and providing economic advice to the federal government. The Department also prepares the federal budget, administers the transfer of federal funds to provinces and territories, and monitors economic and financial developments in Canada.
- 4.81 Tax expenditures. Most of the tax expenditures that support the fossil fuel sector identified by Finance Canada for this study are accelerated deductions. Accelerated deductions encourage investment by allowing businesses to write off the capital cost of certain assets faster than if those costs were written off over the useful life of the asset, reducing taxes payable in the short term. These deductions do not affect the overall taxes a corporation pays in the long term, but allow a corporation to defer its taxes to a future taxation period.
- 4.82 In the years between the Commissioner's 2000 study and this study, Finance Canada continued to review the effectiveness of its tax expenditures related to the fossil fuel sector. A number of such expenditures—for example, the Resource Allowance and the Transitional Arrangement for the Alberta Royalty Tax Credit, were phased out by 2007. Other expenditures that have been or are being phased out are noted in the following paragraph (indicated by *).

- **4.83** The following tax expenditures were available to the fossil fuel sector during the study period:
 - Earned depletion*. This incentive was designed to encourage corporations to undertake exploration and development. This incentive entitled corporations in the oil and gas and mining sectors to an extra deduction of up to 33.3 percent of certain expenses. Although it has been phased out, companies are still entitled to deduct depletion amounts earned before 1990. This expenditure was estimated to cost \$50 million in the 2006–07 fiscal year, decreasing to between \$5 million and \$6 million annually over the rest of the study period.
 - Canadian exploration expense*. This is a cost incurred to determine the existence, location, extent, or quality of a crude oil or natural gas reservoir or mineral resource not previously known to exist. The cost also includes pre-production development expenses incurred to bring a new mine into production. Expenses are deductible at a rate of 100 percent in the year incurred. Under a neutral tax system, successful exploration and pre-production expenses would normally be capitalized and amortized over the life of the asset. Budget 2011 announced that development expenses incurred to bring a new oil sands mine into production, which had been treated as Canadian exploration expenses, will gradually be treated as Canadian development expenses (meaning they would be deductible at the lower rate of 30 percent annually), with implementation to occur between 2013 and 2016. Estimates for this expenditure were not available.
 - Canadian development expense for oil sands resource properties*. Canadian development expenses (CDE) can be deducted at the accelerated rate of 30 percent annually. Before Budget 2011, the costs of acquiring oil sands properties could be treated as CDE. This rate was more rapid than that provided to similar expenses in the conventional oil and gas sector. Budget 2011 announced that such expenses would no longer qualify as CDE. Estimates for this expenditure were not available.
 - Flow-through share deductions. Flow-through shares are a government-authorized tax shelter. Corporations can transfer certain unused tax deductions to investors who, in addition to receiving an equity interest in the corporation, are entitled to claim deductions for Canadian exploration and development expenses (described in previous bulleted points). Investors are typically willing to pay more for such shares because of the flow-through tax deductions allowed. Flow-through shares are a

- financing mechanism used mostly by corporations without sufficient income to make immediate use of the available tax deductions. Cost estimates for this expenditure included the mining and clean energy sectors, and ranged from \$220 million to \$530 million annually over the study period.
- Reclassification of expenses under flow-through shares. Small corporations in the oil and gas sector are entitled to reclassify the first \$1 million of Canadian development expenses passed on to shareholders under a flow-through share agreement (deductible at 30 percent) as Canadian exploration expenses (deductible at 100 percent). This expenditure was estimated to cost \$8 million in the 2006–07 fiscal year, but to generate revenue (a negative expenditure) of between \$7 million and \$15 million annually between 2007–08 and 2010–11.
- Deductibility of contributions to a qualifying environmental trust. Corporations that are required to set aside funds in environmental trusts—to ensure that adequate amounts are available to conduct restoration activities at the end of operations—are allowed to deduct those contributions as expenses in the year the contribution is made instead of when the costs of restoration are actually incurred. Cost estimates for this expenditure included the mining and clean energy sectors and were less than \$3 million annually over the study period.
- Accelerated capital cost allowance (ACCA) for oil sands*. This incentive was provided to improve cash flows to oil sands projects, to allow Canada to compete with other jurisdictions in securing large investments, and to promote the development of the oil sands. Budget 2007 announced the phase-out of this measure over four years, beginning in 2011. At the time of Budget 2007, the costs of this expenditure were forecast to be on average \$300 million annually over the study period.
- Accelerated capital cost allowance for mining. This incentive is similar to the ACCA for the oil sands (described in the previous bulleted point), but remains in place for the mining sector, including coal mines. Estimates for this expenditure were not available.
- 4.84 Finance Canada does not collect the data necessary to calculate the portion of tax expenditures attributable specifically to the fossil fuel sector. However, the Department was able to provide aggregate estimates of the costs of some of the previously noted tax expenditures attributable to a group of sectors, including mining, oil and gas, and

clean energy. Based on data available from Statistics Canada, fossil fuels represent a majority of the revenue generated by this group. Exhibit 4.7 shows the estimated cost of each tax expenditure, where available, over the study period.

4.85 Limitations of the estimates. There are a number of limitations associated with the estimates provided in Exhibit 4.7. Some estimates include support to the mining and clean energy sectors, in addition to the fossil fuel sector. Finance Canada forecast the cost of the ACCA for oil sands at the time of Budget 2007, and the estimates reported in this study for the years 2007 to 2011 have not been updated since. In addition, the Department estimated the cost of each tax expenditure in isolation, assuming that all other tax measures remain unchanged and without considering potential interactions among them.

Exhibit 4.7 Federal government tax expenditures for the 2006-07 to 2010-11* fiscal years

Tax expenditures	Cost** (\$millions)
Tax expenditures that are exclusive to the fossil fuel sector	
Accelerated capital cost allowance for oil sands	1,500
Transitional arrangement for the Alberta royalty tax credit	2.5
Reclassification of expenses under flow-through shares	(33)***
Tax expenditures that are available to mining and/or clean energy sectors	
Flow-through share deductions	1,935
Earned depletion	70
Net impact of the resource allowance	18
Deductibility of contributions to a qualifying environmental trust	4
Tax expenditures for which no estimates are available	
Accelerated capital cost allowance for mining	n/a
Canadian development expense for oil sands resource properties	n/a
Canadian exploration expense	n/a

^{*} This reflects the most current data available from Finance Canada. Finance Canada anticipates that data that includes the 2011–12 fiscal year will be available early in 2013.

Source: Adapted to fiscal years by Finance Canada from the Tax Expenditures and Evaluations

^{**} The cost of each tax measure was estimated separately, assuming that all other tax provisions remained unchanged. Many tax expenditures, however, interact with each other such that the impact of changing many provisions at once cannot generally be calculated by adding up the estimates of each individual provision.

^{***} Negative tax expenditures arise when the deviation from the benchmark results in increased revenue to the government.

- 4.86 Other analyses by Finance Canada. In the past, Finance Canada has conducted some studies specific to fossil fuels that included estimates of tax expenditures. In 2001, partly in response to the Commissioner's 2000 study, Finance Canada developed a model to calculate the tax expenditures associated with oil sands projects. Using this model, the Department estimated that the total net present value of tax expenditures for companies operating in the Alberta oil sands region would be \$816 million from 1996 to 2010. At the time of Budget 2007, Finance Canada updated the estimate for the ACCA for oil sands to \$300 million annually for the period 2007 to 2011.
- 4.87 Finance Canada also publishes annual estimates of the costs of tax expenditures; however, they do not include estimates of the costs of accelerated deductions.
- We noted that other recent studies have presented estimates of the cost of tax expenditures. For example, in its 2011 Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels, the Organisation for Economic Co-operation and Development estimated Canadian tax expenditures attributable to the fossil fuel sector. It did so by pro-rating estimates for the oil and gas and mining industries as a whole on the basis of the relative contribution of the various sectors to gross domestic product (GDP).
- 4.89 Although the federal government provides a significant amount of financial support to the fossil fuel sector through tax expenditures, data capture and availability of data remain problematic. The data on the value of tax expenditures available to the fossil fuel sector is incomplete. The only method available to determine the industry of a taxpayer by tax return is the North American Industry Classification System. But this system does not provide the level of detail necessary to identify and break down tax expenditures specific to fossil fuels, and it cannot account for taxpayers with activities in multiple industries.
- 4.90 Other difficulties exist in estimating accelerated deductions. These stem from different approaches to defining the benchmark tax structure and measuring associated deviations. Finance Canada is not aware of a practical methodology that would regularly produce results of reasonable quality or accuracy.

Questions for Parliamentarians to Consider About Fossil Fuel Support

- **4.91** In approving budgets and enacting changes to the *Income Tax* Act, Parliament plays a role in ensuring that programs achieve the government's desired policy objectives. This study provides information to inform parliamentarians about the ways the government supports the fossil fuel sector.
- **4.92** Based on our analysis, we have identified several questions parliamentarians may consider when holding departments and agencies accountable for their support of the fossil fuel sector.
 - Who has overall responsibility within the federal government for monitoring and reporting on Canada's progress against the G-20 commitment to rationalize inefficient fossil fuel subsidies?
 - What steps has the government taken to ensure that support of the fossil fuel sector is not contradicting or impeding policy objectives related to the environment and sustainable development?
 - How is the government working to achieve policy coherence among economic, social, and environmental factors in supporting sustainable development?
- **4.93** In terms of the support the tax system provides, members of Parliament may wish to consider the following questions:
 - What are the financial implications of the various tax expenditures the government offers the fossil fuel sector?
 - What policy objectives do the various tax expenditures for the fossil fuel sector achieve? Are they still relevant? Do they achieve their purpose? How is their effectiveness measured?
 - Are there ways to overcome the data limitations and methodological challenges that are preventing the government from estimating some of the tax expenditures?

Conclusion

- 4.94 The federal government provides support to the fossil fuel sector through the direct expenditure of public funds and through tax expenditures under the *Income Tax Act*. As part of our study, we tried to obtain financial data on the costs and disbursements of the various programs and activities that support the fossil fuel sector.
- 4.95 The 2000 study conducted by the Commissioner of the Environment and Sustainable Development found that over the 30-year period from 1970 to 1999, Canadian direct federal spending on energy production from fossil fuels was \$40.4 billion.
- **4.96 Direct spending.** Based on data that departments and agencies provided, we determined that the federal government supported the fossil fuel sector with \$508 million in direct spending during the five fiscal years from 2007–08 to 2011–12. The majority of direct spending identified was for research and development, more than half of which related to clean technology.
- 4.97 This data is not readily comparable with the 2000 study due to the differences in time periods covered. However, if the level of spending identified in the current study remained constant over 30 years, it would amount to about \$3 billion.
- 4.98 Tax expenditures. The estimated costs of tax expenditures specifically attributable to the fossil fuel sector amounted to \$1.47 billion for the fiscal years 2006–07 to 2010–11. For some tax expenditures, Finance Canada is able to estimate only the costs attributable to a group of sectors, including mining, oil and gas, and clean energy, in which fossil fuels represent a majority of revenue. The cost of these tax expenditures amounted to an additional \$2 billion for fiscal years 2006–07 to 2010–11. This amount does not include the costs of some tax expenditures, such as the Canadian exploration expense, which Finance Canada does not currently have the information or methodologies necessary to estimate.

30

Endnotes

Web links to cited documents that are publicly available are provided in the following notes.

- ¹ Renewable Energy Production and Conventional Energy Subsidies, Petition #58, Joint response by Environment Canada, Finance Canada, Industry Canada, and Natural Resources Canada, http://www.oag-bvg.gc.ca.
- ² Evaluating the Tax System to Advance Environmental Goals, Petition #147, Response by Finance Canada, http://www.oag-bvg.gc.ca.
- ³ International Energy Agency (IEA), Organization of the Petroleum Exporting Countries (OPEC), Organisation for Economic Co-operation and Development (OECD), The World Bank, Joint Report: Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, Prepared for submission to the G-20 Summit Meeting, Toronto (Canada), 26-27 June 2010, p. 4, http://opec.org/opec_web/static_files_project/media/downloads/publications/OPECIEA_OECDWB_Joint_Report.pdf.
- ⁴ Frank Lee, OECD Workshop on Environmentally Harmful Subsidies: OECD Work on Defining and Measuring Subsidies in Industry, Paris, 7-8 November 2002, p. 3, http://www.oecd.org/site/agrehs/35215663.pdf.
- ⁵ Ibid., p. 3.
- ⁶ Ibid., p. 3.
- ⁷ Ibid., p. 4.
- ⁸ Ibid., p. 14.
- ⁹ İEA, OPEC, OECD, The World Bank, Joint Report: Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, p. 5.
- Frank Lee, OECD Workshop on Environmentally Harmful Subsidies: OECD Work on Defining and Measuring Subsidies in Industry, p. 14.
- ¹¹ OECD Leaders' Statement, The Pittsburgh Summit, 24-25 September 2009, p. 14, paragraph 29, http://www.mofa.go.jp/policy/economy/g20_summit/2009-2/statement.pdf.
- 12 Ibid.
- ¹³ Ibid., p. 14, paragraph 29.
- ¹⁴ IEA, OPEC, OECD, The World Bank, Joint Report: Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative, p. 9.
- 15 Ibid.
- ¹⁶ Ibid., p. 8.
- ¹⁷ Ibid., p. 9.

- ¹⁸ Annex: G-20 Initiative on Rationalizing and Phasing Out Inefficient Fossil Fuel Subsidies: Implementation Strategies & Timetables, G-20 Toronto Summit, Canada. 26-27 June 2010, p. 13, http://www.eenews.net/assets/2010/06/28/document_cw_03.pdf.
- ¹⁹ Asia-Pacific Economic Cooperation (APEC) Energy Ministerial Meeting, June 2012: St. Petersburg Declaration-Energy Security: Challenges and Strategic Choices, http://www.apec.org/Meeting-Papers/ Ministerial-Statements/Energy/2012_energy.aspx.
- ²⁰ OECD, Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels, p. 75, http://www.oecd-ilibrary.org/environment/inventory-of-estimated-budgetary-support-and-tax-expenditures-for-fossil-fuels_9789264128736-en.
- ²¹ Ibid.
- ²² Kenneth J. McKenzie and Jack Mintz, The Myths and Facts of Fossil Fuel Subsidies: A critique of Existing Studies, 9 October 2011, University of Calgary School of Public Policy (SPP) Research Paper No. 11-14, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1940535.
- ²³ OECD, Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels, p. 77.
- ²⁴ Finance Canada, Tax Expenditures and Evaluations 2010, p. 9, http://www.fin.gc.ca/taxexp-depfisc/2010/taxexp10-eng.asp.
- ²⁵ OECD, Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels, p. 37–38.
- ²⁶ Ibid.; OECD Secretariat, Measuring Support to Energy–Version 1.0: Background paper to the joint report by IEA, OPEC, OECD and The World Bank on "Analysis of the Scope of Energy Subsidies and Suggestions for the G-20 Initiative," p. 31, paragraph 103, http://www.oecd.org/env/45339216.pdf.
- ²⁷ OECD, Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels, p. 37; OECD Secretariat, Measuring Support to Energy–Version 1.0, p. 31, paragraph 103.
- ²⁸ Finance Canada, Tax Expenditures and Evaluations 2010, p. 9.

About the Study

Objectives

The overall objective of this study is to document the support that the federal government provides to the fossil fuel production sector.

The study's three sub-objectives are to

- identify the policy instruments that provide support to the sector,
- identify the federal programs and activities that support those policy instruments, and
- determine the level of financial support that the identified programs and activities provide to the fossil fuel sector.

Criteria were not established because this is a study and not an audit. A study differs from an audit in that it is more descriptive and exploratory and does not include observations or recommendations that are directly attributable to the entities.

Scope and approach

This study focused on the federal government's support to the Canadian fossil fuel sector, without applying any one particular definition of the term "subsidy" or any one methodology for measuring such support. Rather, this study included direct spending and tax expenditures based on an inventory approach, without applying the specificity principle.

The fossil fuel production sector includes businesses related to oil, gas, and coal from both conventional and unconventional (oil sands, shale gas) sources. Our work concentrated on the support the federal government provided to all stages of fossil fuel production up to delivery to the consumer—namely, exploration, extraction, transportation, and upgrading/refining. In addition to the operators, we included upstream, midstream, and certain downstream service providers.

We excluded activities related to consuming fossil fuels, including electricity generation, the transportation sector, and energy-intensive manufacturing industries.

We did not assess the impacts that the programs and activities may have had on greenhouse gas emissions or the effectiveness or efficiency of the identified programs and activities. Furthermore, our study focused on the costs to the government of the programs and activities it provided, not on the benefit the industry receives from them.

We studied the programs available to the sector as the following 10 entities identified them:

- · Natural Resources Canada,
- Natural Sciences and Engineering Research Council,
- · National Research Council.
- Atlantic Canada Opportunities Agency,

- Industry Canada,
- Sustainable Development Technology Canada,
- Western Economic Diversification Canada,
- · Canadian International Development Agency,
- · Foreign Affairs and International Trade Canada, and
- Department of Finance Canada.

Based on preliminary work, we determined that these were the main federal entities that support the fossil fuel sector. We interviewed officials from those entities and obtained documents describing their programs and related financial data.

We sent a questionnaire to all of these entities. We used the results to prepare an inventory of the active programs available to the fossil fuel sector.

As part of the study, a panel of experts with experience in the fossil fuel sector provided us with valuable input and advice.

Period covered by the study

This study focuses on federal government programs that provided support to the fossil fuel sector during fiscal years 2006–07 to 2011–12.

Our work for this study was completed on 28 August 2012.

Study team

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Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

A Study of Federal Support to the Fossil Fuel Sector

Environmental Petitions







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To the Honourable Speakers of the House of Commons and the Senate:

On behalf of the Auditor General of Canada, I have the honour to transmit herewith this Fall 2012 Report, which is to be laid before the House and the Senate, in accordance with subsection 23(5) of the *Auditor General Act*.

Yours sincerely,

Scott Vaughan

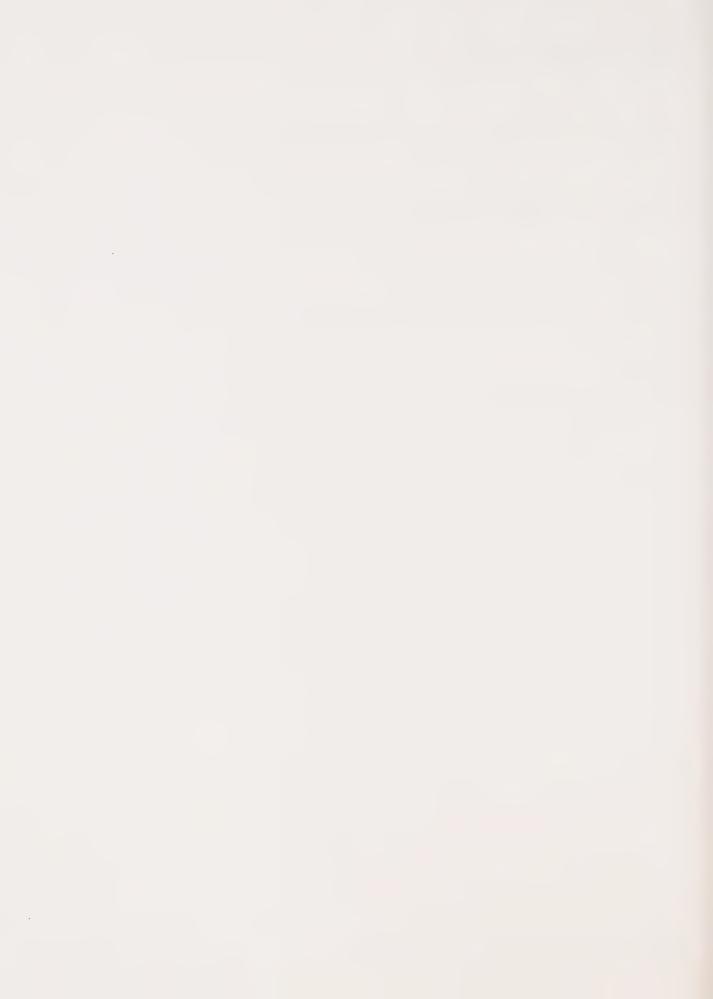
Commissioner of the Environment and Sustainable Development

OTTAWA, 18 December 2012



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The Commissioner's Perspective

Is environmental protection keeping pace with economic development?

Natural resources and international trade have always been at the heart of the Canadian economy and will very likely remain so into the future. Like other export-intensive countries, Canada faces critical challenges ahead. The global economy is undergoing fundamental changes as a result of the global economic downturn and the emergence of new consumer economies such as Brazil, Russia, India, and China.

As a trading nation, Canada looks beyond its borders to generate jobs, economic growth, and prosperity. Today, roughly 30 percent of Canada's gross domestic product (GDP) is fuelled by exports, and natural resources account for half of that. The federal government estimates that the natural resource sector provided jobs for over 750,000 Canadians in 2010 and is poised to grow even more. It also estimates that more than 600 major resource projects, representing \$650 billion in new investments, are under way or planned across the country for the next 10 years.

The expected boom in natural resource development brings not only economic opportunities, but also environmental challenges. For at least the past two decades, international markets, trade rules, and the private sector have recognized that economic growth, international trade, and environmental protection are interlinked. For example, Canada has been at the forefront—both in global trade agreements like those of the World Trade Organization, and regional and bilateral agreements—in acknowledging the critical role that environmental stewardship plays in the global economy. This year marks the 20th anniversary of the North American Free Trade Agreement, an agreement that codified explicit environmental commitments within trade rules and a parallel environmental cooperation agenda. Since then, Canada has completed a number of other trade agreements, including those with Costa Rica, Colombia, and Chile, which recognize that international trade and high levels of environmental protection go hand in hand.

As I noted in my 2012 Spring Report to Parliament, there is a growing list of Canadian companies that are integrating environmental performance into how they do business both here and abroad. For example, after years of facing consumer boycotts, Canada's forestry



Scott Vaughan
Commissioner of the Environment
and Sustainable Development

sector is now a world leader in sustainably produced timber and forest products. In a number of global industries, Canadian companies continue to demonstrate environmental leadership.

A key challenge in expanding Canada's development and export of natural resources—from oil and gas to minerals and metals—will involve meeting or exceeding the environmental standards and consumer expectations of foreign markets. Trade cases continue to underscore that the environmental characteristics of a product, as well as how it is processed and transported, can affect market access and consumer choice. Therefore, it is vital from an economic perspective that Canada's environmental protections keep pace with economic development.

This report examines the following federal environmental programs and activities, which help ensure that natural resource development is both responsible and sustainable:

- protecting our ocean resources by establishing marine protected areas;
- managing environmental risks associated with offshore oil and gas development; and
- setting financial guarantees and liability limits for mining, shipping and offshore platforms, and nuclear power.

We have also included a study of federal support to the fossil fuel sector. This study highlights the critical link between environmental and economic issues raised in past reports. In the annual environmental petitions report, we follow up on questions posed in three petitions received in recent years. We present what Environment Canada and Health Canada are doing with regard to substances used in hydraulic fracturing for shale gas.

Looking forward, in 2013 we will be reporting on several aspects of the federal government's sustainable development strategy. In particular, we will be assessing the fairness of the information contained in the next progress report on the Federal Sustainable Development Strategy 2010–2013, as well as providing feedback to the Minister of the Environment on the government's next draft of the Federal Sustainable Development Strategy. In addition, we will be reporting on the implementation of the federal and departmental strategies.

Protecting and conserving Canada's oceans

The world's oceans facilitate about 90 percent of global trade and provide a wealth of benefits as well as material goods, most notably commercial and subsistence fisheries. Fish are the main source of protein for 1.5 billion people. Ocean scientists at the International Programme on the State of the Oceans reported in 2011 that, faster than predicted, human activities are compromising the oceans' ability to support us and stated that deferring action now will increase costs in the future. Canada's oceans are hardly immune to global threats. Canada's State of the Oceans Report, 2012, by Fisheries and Oceans Canada, noted that our country's oceans are increasingly threatened by pollution, overfishing, coastal development, and climate change.

Marine protected areas (MPAs) can be a cost-effective way of protecting the oceans, while ensuring that activities like commercial fishing, offshore drilling, and marine shipping respect and work in tandem with conservation goals. MPAs are not necessarily sanctuaries where all human activities are banned. In many, human activities take place but are closely managed for long-term sustainability. Research has shown that MPAs can have economic benefits, including higher fish catches in adjacent areas.

On this front, there is some good news at the international level. An October 2012 international assessment of progress being made under the United Nations Convention on Biological Diversity found rapid growth in the number of marine protected areas worldwide, making up more than 8.3 million square kilometres, or about 2.3 percent of the world's oceans. However, that is still short of the target accepted in 2010 under the Convention on Biological Diversity, which called for 10 percent of global oceans to be protected by MPA networks and other effective area-based conservation measures by 2020.

Here in Canada, 20 years after signing the Convention on Biological Diversity, only about 1 percent of our oceans and Great Lakes is protected. Our audit showed that at the current rate of progress, it will take Canada many decades to establish a fully functioning MPA network and achieve the target to conserve 10 percent of marine areas. While the process of establishing MPAs takes time, and there are many reasons for this slow progress, the fact remains that conservation actions are not keeping up with the increasing pressures faced by our oceans.

Offshore oil and gas activities

Protecting Canada's oceans requires more than setting aside protected areas. It requires vigilance by various resource extraction industries. The Macondo (*Deepwater Horizon*) incident in 2010 captured global attention, with the well blowout resulting in an estimated 4.9 million barrels of oil being spilled into the Gulf of Mexico. That incident demonstrated starkly the absolute importance of being ready to respond to a spill of that magnitude and the need for strong regulatory oversight to help prevent environmental disasters. The Macondo spill reminded us how quickly environmental damage can occur, and how expensive that damage can be—the estimated cost of that single incident is over \$40 billion US dollars.

In this report, we examined whether the two offshore petroleum boards operating in Atlantic Canada appropriately managed the environmental risks and impacts from offshore oil and gas activities. This report is the first time my office has conducted a performance audit of those boards. We found numerous good management practices, particularly with regard to assessing and managing current environmental impacts. We also found several opportunities for improvement.

While offshore oil and gas operators are responsible for responding to incidents, including major spills, in the case that an operator does not or cannot respond appropriately to a spill, the relevant board can take over management of the response, with support from federal departments and agencies. The obvious question from the audit is this: Are the boards and their federal partners adequately prepared to respond to a major oil spill? In my view, the boards and their federal partners are not adequately prepared and, although the probability of a major spill in the Atlantic offshore area is relatively low, they need to do more to prepare for one. This is particularly the case given the potential for increased risks due to deepwater drilling and expanding exploration and development activities.

We identified several shortcomings, including insufficient spill response tools across the federal government, inadequately tested capacity, poorly coordinated response plans, and out-of-date or missing agreements between the boards and supporting departments. In addition, the Canada—Newfoundland and Labrador Offshore Petroleum Board has yet to complete its review of operators' spill response capabilities and, therefore, does not have adequate assurance that operators are ready to respond effectively to a spill. Although the risks from an oil spill do not pertain to Nova Scotia, where only gas is currently produced, exploration for oil is expected to begin there in the near future.

The economic and financial impact of environmental risks

The legacy of resource development, such as tailings ponds left over from decommissioned mines, and unforeseen events, like oil spills or nuclear incidents, can not only damage the environment, but can pose significant financial risks to Canadian taxpayers. The federal government requires financial assurances for several key industries to operate in Canada. These assurances help manage risks to the environment and to the public purse by ensuring that funding is available from operators to decommission and restore sites after major resource projects have ended and to clean up incidents such as spills. Our chapter on the Financial Assurances for Environmental Risks examined the systems in place to obtain financial assurances.

We found that the federal departments we examined had procedures in place to obtain environmental financial assurances. We noted, however, that the departments lacked complete inventories of the assurances they held and did not know whether these assurances were sufficient to address the risks they were meant to cover. More concerning, given the expected increase in activity in the natural resource sector, we found that Aboriginal Affairs and Northern Development Canada, the department responsible for resource development in the North, was not conducting the required inspections that are essential for ensuring that the terms and conditions of project approvals are being met.

We also found that liability limits have not kept pace with the potential consequences of an incident. For example, the \$75 million absolute liability limit for nuclear facilities has not changed since it was introduced in the 1970s, while the absolute liability limits for incidents involving offshore oil and gas development (which range up to \$40 million) have not been updated in nearly 25 years. We found that Canada's limits are significantly lower than those of other countries. To put it in context, the United States' National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling found the US\$75 million absolute liability limit for offshore incidents in the United States was "totally inadequate," and placed the economic risk on the backs of taxpayers. As noted above, the Macondo (*Deepwater Horizon*) incident has resulted in estimated costs of over \$40 billion US dollars.

These findings, when considered with our concerns regarding preparedness to effectively respond to a major oil spill, show clearly that Canadians are exposed to environmental risks and the financial implications that go with them.

We also noted that the recent Jobs, Growth and Long-term Prosperity Act included key changes to the Fisheries Act and the government's Policy for the Management of Fish Habitat (Fish Habitat Policy). Before these changes, the Minister of Fisheries and Oceans could authorize projects that resulted in the harmful alteration, disruption, or destruction of fish habitat while requiring financial guarantees for habitat compensation, under the long-standing "no net loss" principle that was at the heart of the former Fish Habitat Policy. Recent amendments to the Fisheries Act were passed by Parliament in the summer of 2012. In light of the transformative nature of the changes made, I am concerned that the government does not know which aspects, if any, of the former "no net loss" principle remain in effect, and whether compensation plans are required for new projects. A practical consequence of this confusion is that the government does not know what will happen to the approximately \$120 million in financial assurances it now holds under the conditions of the former legislation.

This report also contains a study on federal support to the fossil fuel sector. At the G-20 meetings in 2009, Canada committed to rationalizing and phasing out inefficient fossil fuel subsidies in part to decrease emissions of greenhouse gases. I note that the federal government has taken action in line with this commitment. Direct support has decreased to between \$60 million and \$160 million annually, and at the same time, the proportion that supports cleaner technologies continues to increase. In addition, the government is phasing out some tax incentives that favoured the fossil fuel sector. The reduction of support to the fossil fuel sector clearly shows Canada going in the right direction.

At the same time, a number of other tax incentives that may provide a significant amount of support for fossil fuel extraction remain in place. We note, as we did in a similar study conducted in 2000, that the costs to taxpayers of tax incentives are difficult to estimate accurately. Finance Canada's estimates suggest that tax incentives to the oil, gas, mining, and clean energy sectors, of which fossil fuels represent the majority of GDP, may have amounted to more than \$3 billion over the past five years.

Environmental petitions

Finally, I am pleased to present the annual environmental petitions report. This year, Canadian residents submitted 23 environmental petitions reflecting many of the significant environmental issues facing Canada today, such as toxic substances, climate change, biodiversity and

fish habitat, and environmental assessment. We are pleased to report that departments and agencies responded on time to all petitions this year.

Since 2010, three environmental petitions have been submitted raising questions about the federal government's role in regulating hydraulic fracturing for shale gas and about disclosure of the substances being used in the process—many of which have been assessed as toxic when used in other applications. Production of natural gas from unconventional sources—such as shale gas—is expected to increase by more than 50 percent within the next 10 years, and to almost double in the next 20 years. While the regulation of the oil and gas sector largely falls under provincial jurisdiction, regulating toxic substances is a federal matter. Regulating toxic substances includes identifying and assessing the risks to human health and the environment posed by these substances. It also involves controlling the risks where substances are deemed to be toxic, and maintaining an inventory of pollutant releases.

We followed up with Environment Canada and Health Canada to get an update on what has been done since the Ministers responded to these petitions. Federal officials told us that they consider hydraulic fracturing to be an emerging issue that they are now starting to investigate. They are currently gathering information on the substances used for hydraulic fracturing in Canada. According to the government, until it has a better understanding of hydraulic fracturing, it cannot determine whether risk assessments and control measures are warranted. Currently, oil and gas exploration and drilling activities are exempt from reporting pollutant releases to Environment Canada. A review of these reporting requirements will be completed in March 2014.

The pace of progress

Reflecting on my current and past reports, I have seen several areas of progress by the federal government. In this report, we note the use of scientific expertise in selecting marine protected areas and note that the government is reviewing liability and compensation systems to ensure they reflect current realities. In 2011, we noted the government's plan for implementing an integrated environmental monitoring system in the oil sands region. We look forward to the implementation of that plan. The federal government has also made progress in other key areas, including expanding the use of environmental indicators to inform citizens about the state of Canada's environment.

We have also seen causes for concern in the management of programs directly related to natural resources. Last year, we pointed to weaknesses in the capacity of the federal government to identify the cumulative

effects of large-scale oil sands projects and to enforce compliance with the Canadian Environmental Protection Act, 1999. We also noted problems involving how the National Energy Board followed up when it found deficiencies in systems designed to ensure safety, pipeline integrity, and environmental protection. In 2010, we reported deficiencies in the federal government's readiness to respond to spills from ships. I note, however, that Budget 2012 saw some welcome steps to increase funding for pipeline inspections and to improve preparedness for oil spills from tankers and other vessels in Canadian waters.

This year's report has identified other shortcomings. For example, the current level of inspections of major resource projects in the North is very low relative to the level of activity. The government does not know the actual cost of its support to the fossil fuel sector. Meanwhile, offshore resource development continues to expand even as the government makes slow progress establishing marine protected areas. As well, the petroleum boards on the east coast and their federal partners are not adequately prepared to respond to a major oil spill should they need to step in.

Considering the central role of natural resources in today's Canadian economy, it is critical that environmental protections keep pace with economic development. In this report, we found a number of encouraging practices, but also numerous shortcomings. When combined with our previous reports and viewed in the context of the risks and challenges posed by increasing development, these shortcomings leave me concerned that environmental protection is failing to keep pace with economic development. Recognizing Canada's record of leadership in linking international trade with environmental protection, I am hopeful that these gaps will be addressed and that natural resource development and environmental stewardship will move forward in tandem.



Atlantic Offshore Oil and Gas Activities

Chapter 1

Main Points

What we examined

Canada's offshore oil and natural gas exploration and development activities in the Atlantic region are regulated by the Canada—Newfoundland and Labrador Offshore Petroleum Board and the Canada—Nova Scotia Offshore Petroleum Board. The boards are joint federal—provincial bodies. Their core regulatory responsibilities include safety, protection of the environment, and management and conservation of petroleum resources.

The boards are responsible for managing significant environmental risks associated with offshore oil and gas activities. According to the governing legislation, offshore operators are required to respond to spills. However, if the operator cannot or does not take appropriate measures, the board may lead the response to a major spill. The boards may seek support from federal parties, including the Canadian Coast Guard, Environment Canada, Transport Canada, and Natural Resources Canada.

We examined how the boards are managing the environmental risks and impacts associated with offshore oil and gas activities. Our audit work included the boards' procedures for assessing and authorizing offshore petroleum projects; ensuring compliance with environmental requirements; and preparing for and responding to spills. The boards work with the federal departments of Natural Resources, Environment, Transport, and Fisheries and Oceans, including the Canadian Coast Guard. We also looked at the advice and support those departments provide to the boards. Our audit did not include any provincial organizations or private sector operators.

Audit work for this chapter was completed on 24 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

Marine ecosystems in Atlantic Canada are biologically diverse, providing critical habitat for species at risk and migratory birds in locations such as the Grand Banks, Sable Island, and The Gully Marine Protected Area. The offshore regions are also a vital part of the country's economy, providing employment for thousands of people and supporting activities such as aquaculture and fisheries, tourism and recreation, and shipping and transportation.

The potential impacts of an offshore oil spill in Atlantic Canada, such as seen in the Gulf of Mexico in 2010, could be widespread and devastating to the environment, industry, and the livelihoods of many Canadians. As a result, it is essential that the offshore petroleum boards manage the risks and impacts associated with the oil and gas activities they regulate.

What we found

- The boards have applied some good practices when assessing and approving offshore projects and activities, such as seeking input from key stakeholders. However, the boards have not yet established or updated their policies and procedures to guide environmental assessments, nor are they systematically tracking the measures to prevent or reduce environmental impacts. It will be important for the boards to determine how they will meet the objectives of their governing legislation to protect the environment, given the changes introduced by the new Canadian Environmental Assessment Act, 2012.
- The boards have taken adequate steps to ensure that offshore operators comply with environmental requirements. More remains to be done to implement risk-based audits of the operators' management systems, and to establish more formal arrangements for obtaining independent observations of offshore oil and gas activities.
- The boards have managed the current environmental impacts associated with oil and gas activities in Canada's Atlantic offshore areas in a manner consistent with the existing size and scale of operations. However, if a board were to take over the response to a major oil spill, the board and the federal entities that might contribute to the response efforts are not adequately prepared to play this role.
- Specifically, we found that the response plans of the boards and the federal entities are not coordinated and are sometimes inconsistent; the boards and federal entities have not tested or exercised their collective plans or collective capacity; and several memoranda of understanding are either out of date or not in place. In addition, the Newfoundland-Labrador Board has not yet completed the assessment of the operators' spill response capabilities that it began in 2008.

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• Unlike the Newfoundland–Labrador Board, the Nova Scotia Board does not currently regulate activities that produce oil. It expects exploration for oil within its jurisdiction in the near future, and so has work to do to prepare for this.

The entities have responded. The entities agree with our recommendations. Their detailed responses follow the recommendations throughout the chapter.

Financial Assurances for Environmental Risks

Chapter 2 Main Points

What we examined

Environmental financial assurances are an important mechanism the federal government uses to help shield taxpayers from the costs of environmental protection, cleanup, and reclamation for a range of natural resource development projects of the private and public sector, including mining, energy projects, the transport of oil and gas, and nuclear. Absolute liability limits are used in certain sectors to limit or cap the total amount that an operator may be liable for if an incident occurs, without proof of fault. Such absolute liability caps are used in Canada and in other countries.

Assurances can be in the form of letters of credit, trust funds, guarantees, and insurance. The federal government holds or has access to these assurances during the lifetime of a project.

The responsibility for natural resource development rests primarily with the provinces. However, there are several specific and well-defined federal regulatory responsibilities covering natural resource development, energy production, and transportation.

We examined whether selected federal entities have appropriate systems in place for obtaining and managing environmental financial assurances. Our audit focused on federal regulation of four sectors: mining (north of the 60th parallel), nuclear, offshore oil and gas, and marine transportation. We also examined liability limits established for nuclear facilities and oil spills from ships, as well as the liability regime for offshore oil and gas production, which includes both an absolute liability limit and an unlimited liability for parties at fault.

Audit work for this chapter was completed on 31 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

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Why it's important

The environmental costs resulting from natural resource development projects can run into tens of millions—or in rare cases billions of dollars. Environmental financial assurances are an important safeguard, since they provide funds for future environmental liabilities to be paid for by a proponent or operator. They provide for liabilities arising from projects with long lifespans where risks associated with decommissioning and their related costs may not become known for decades. In conjunction with a regulatory framework, they can act as a powerful incentive to industry to reduce environmental impacts as a core part of business.

Environmental financial assurances are a tangible example of the "polluter-pays principle" in action, since the project proponent or operator is expected at the outset to cover all costs associated with environmental protection, site reclamation, longer-term protection of closed sites, and damages from accidents.

What we found

- Federal entities we examined have procedures in place for obtaining environmental financial assurances. Based on available information, we estimate that the assurances they have received give them access to approximately \$11.6 billion.
- Federal entities lack information to know if the assurances received are sufficient to cover the financial risks of projects, such as the cost of decommissioning and reclamation. We noted that Aboriginal Affairs and Northern Development Canada did not compare, on a regular basis, whether the financial securities obtained during the life of a mine are sufficient to meet the cost of reclamation of land and water. Fisheries and Oceans Canada was not able to confirm the total dollar value of the securities it held, whether the securities were still valid, or if they fully covered the estimated cost of fish habitat compensation plans.
- In two of the examined sectors—nuclear and offshore oil and gas—liability limits for damages to third parties are outdated and generally much lower than those in other countries. Liability limits for damages to third parties from nuclear facilities have not changed in 35 years. Similarly, the offshore oil and gas liability limits have not changed in more than 20 years. In the marine transportation sector, Transport Canada acknowledges a risk that the current maritime liability limits and compensation regimes may not be sufficient to cover the cost of any major spill in Canadian waters. As a result, taxpayers may have to cover shortfalls and pay for environmental remediation.

• The Canadian Nuclear Safety Commission has obtained environmental financial assurances to cover the decommissioning costs of major nuclear sites. It is working to expand the requirement for such assurances to include licensees in the areas of medical and industrial applications and academic research.

The entities have responded. The entities agree with all of our

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Marine Protected Areas

Chapter 3 Main Points

What we examined

Marine protected areas (MPAs) are a key tool that Canada has committed to using to protect and conserve marine biodiversity. As a signatory to the United Nations Convention on Biological Diversity, Canada agreed to an international target of conserving 10 percent of marine areas by 2020 through networks of protected areas and other conservation measures. A network of marine protected areas is a collection of individual marine protected areas that operates cooperatively in order to fulfill ecological aims more effectively and comprehensively than individual sites could do alone.

Fisheries and Oceans Canada, Parks Canada, and Environment Canada are the three federal authorities with specific, complementary mandates to establish and manage marine protected areas in Canada's oceans and Great Lakes. Fisheries and Oceans Canada is responsible for leading and coordinating the development and implementation of a national network of MPAs on behalf of the Government of Canada and also has a mandate to establish individual marine protected areas. Parks Canada is responsible for establishing marine protected areas to protect and conserve representative examples of Canada's natural and cultural marine heritage, to provide opportunities for public education and enjoyment, and to contribute to a national network of marine protected areas. Environment Canada is responsible for protecting habitat for a variety of wildlife, including migratory birds and species at risk.

We examined actions taken by Fisheries and Oceans Canada and Parks Canada to plan, establish, and manage marine protected areas.

Audit work for this chapter was completed on 28 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

The world's oceans are under threat from the effects of pollution and over-exploitation. According to Fisheries and Oceans Canada, in 2009 the quantity of Canada's fishery catches was 41 percent less than the peak harvest volumes of the late 1980s; the 2009 landed values were among the lowest on record since 1984.

Conserving and protecting marine biodiversity is not solely an environmental priority. As recently reported at the 2012 World Economic Forum, the ocean's natural capital (the stock of ecological goods and services that can be maintained for use in the future) is intrinsic to the health and functioning of the world economy. Today, more than 1.5 billion people count on fish for their daily protein source. With the world population projected to reach 9 billion by 2050, humankind needs to double the production of food without further depleting Earth's natural capital.

In concert with other ocean management initiatives, the benefits of marine protected area networks include protecting species and ecosystems, protecting unique and threatened species, capturing and storing carbon, and providing refuge for species displaced by habitat change. MPA networks can also provide social and economic benefits, such as sustained fisheries, and enhanced recreation and research opportunities.

What we found

- Fisheries and Oceans Canada has established eight MPAs, led the development of the 2011 National Framework for Canada's Network of Marine Protected Areas, and is now developing technical guidance for implementing the Framework. However, the Department has not coordinated with other authorities and stakeholders to produce a plan for a network of marine protected areas as called for by the *Oceans Act* (in force in 1997). The Department has not identified the specific areas that need to be protected by it and others to create a national network that would conserve and protect Canada's marine habitats, animals, and plants.
- Parks Canada has made substantial progress toward its plan for establishing MPAs that would be representative of Canada's marine environments. The Agency has defined 29 marine regions in Canada, identified representative areas within 28 of those regions, decided on MPA candidate sites within 14 regions, and established two MPAs in legislation. However, significant work remains to be done. Parks Canada needs to select candidate sites for MPAs in 15 of its marine regions, and establish MPAs in the 26 of 29 regions where they have yet to be established. Although it has not set a timeline for doing so, the Agency plans to have MPAs in each of its 29 defined marine regions—these MPAs will be the Agency's contribution to Canada's MPA network.

• Both Fisheries and Oceans Canada and Parks Canada have recognized through their commitments within the Federal Sustainable Development Strategy that concrete actions are needed to complete this work, but they have not met these commitments. It has been 20 years since Canada ratified the United Nations Convention on Biological Diversity and 15 years since it committed to leading and coordinating the development and implementation of a national network of marine protected areas under the *Oceans Act*. Yet there is no national network of marine protected areas. Fisheries and Oceans Canada estimates that marine protected areas currently cover about 1 percent of Canada's marine environment. At the current rate of progress, it will take many decades for Canada to establish a fully functioning MPA network and achieve the target established in 2010 to conserve 10 percent of marine areas under the United Nations Convention on Biological Diversity.

The entities have responded. The entities agree with all of the recommendations. Their detailed responses follow the recommendations throughout the chapter.

A Study of Federal Support to the Fossil Fuel Sector

Chapter 4 Main Points

What we examined

As a member of the G-20, Canada has officially recognized that efforts to deal with climate change, wasteful energy consumption, market distortions, and barriers to clean energy investment are undermined by inefficient fossil fuel subsidies.

The purpose of this study was to provide parliamentarians with information on the various means, including but not limited to subsidies, by which the government supports the fossil fuel sector, and the cost of that support. Because there is no single entity within government that is responsible for assembling a listing of government programs and activities that support the fossil fuel sector in Canada, our study undertook to compile such an inventory.

Where a program offered support to other economic sectors as well, we considered to the extent possible only the value of the support attributable to the fossil fuel sector. We also included programs that reduce carbon footprint through clean energy technology.

This document is not an audit report. For this reason, our observations should not be considered an assessment of the government's current practices. Our study did not assess the effectiveness or efficiency of the programs and activities identified or their impacts.

Our work for this chapter was completed on 28 August 2012. More details about the objectives, scope, and approach are in **About the Study** at the end of this chapter.

Why it's important

In general terms, subsidies have a direct effect on public sector budgets. Subsidies can help address market failures, respond to social needs, and encourage environmental improvements. At the same time, subsidies can also exert market and pricing distortions that can have negative impacts on environmental quality.

The Organisation for Economic Co-operation and Development has identified fossil fuel subsidies in its member nations amounting to between US\$45 billion and US\$75 billion annually between 2005 and 2010. Approximately 30 percent of that amount was received by

producers, and the majority was provided through tax expenditures. A report submitted to the G-20 noted that subsidies to producers of fossil fuels worldwide may be around US\$100 billion per year.

According to the International Energy Agency (IEA), the complete phase-out of global subsidies for fossil fuel consumption could reduce greenhouse gas emissions by 1.7 gigatonnes by 2020. This would amount to approximately 40 percent of the abatement needed to limit global warming to a 2°C rise by 2020. Although reform of fossil fuel subsidies on its own may not be sufficient to resolve climate change, according to the IEA it is a necessary step forward.

What we found

- The government has a broad range of programs that provide support to the fossil fuel sector. That support can be grouped into two main types: direct spending through various programs; and tax expenditures under the *Income Tax Act*, which represent the majority of financial support.
- Based on the data that the government provided to us, the majority (97 percent) of direct spending to support the fossil fuel sector was for research and development, more than half of which related to clean technology. Other direct spending went to economic development activities. Total direct spending amounted to \$508 million over the fiscal period 2007–08 to 2011–12. Extended over 30 years, this would represent a significant decline in direct spending support to the sector since the 30 years preceding our 2000 study of government support for energy investments.
- The costs of tax expenditures are not as easily determined as are direct expenditures, due to limitations in data availability and the methodological challenges of developing cost estimates.
- The estimated costs of tax expenditures that Finance Canada was able to attribute specifically to the fossil fuel sector amounted to \$1.47 billion over the fiscal period 2006–07 to 2010–11, primarily relating to the accelerated capital cost allowance for oil sands projects. This tax expenditure is being phased out over four years. A number of other tax expenditures are also being phased out over varying time periods. The estimated costs of tax expenditures attributable to the oil and gas, mining, and clean energy sectors as a whole amounted to about \$2 billion, accounted for largely by deductions for flow-through shares. Finance Canada was unable to estimate the proportion of this support that was attributable specifically to the fossil fuel sector. For other tax expenditures, such as the accelerated capital cost allowance for mining and Canadian exploration expenses, the Department was unable to provide an estimate of the costs.





Appendix Auditor General Act—Excerpts

An Act respecting the office of the Auditor General of Canada and sustainable development monitoring and reporting

INTERPRETATION

Definitions

2. In this Act,

"appropriate Minister"

"appropriate Minister" has the meaning assigned by section 2 of the Financial Administration Act:

"category I department"

"category I department" means

- (a) any department named in Schedule I to the Financial Administration Act;
- (b) any department in respect of which a direction has been made under subsection 11(3) of the Federal Sustainable Development Act; and
- (c) any agency set out in the schedule to the Federal Sustainable Development Act.

"Commissioner"

"Commissioner" means the Commissioner of the Environment and Sustainable Development appointed under subsection 15.1(1);

"sustainable development"

"sustainable development" means development that meets the needs of the present without compromising the ability of future generations to meet their own needs;

POWERS AND DUTIES

Examination

5. The Auditor General is the auditor of the accounts of Canada, including those relating to the Consolidated Revenue Fund and as such shall make such examinations and inquiries as he considers necessary to enable him to report as required by this Act.

Annual and additional reports to the House of

- 7. (1) The Auditor General shall report annually to the House of Commons and may make, in addition to any special report made under subsection 8(1) or 19(2) and the Commissioner's report under subsection 23(2), not more than three additional reports in any year to the House of Commons
 - (a) on the work of his office; and,
 - (b) on whether, in carrying on the work of his office, he received all the information and explanations he required.

Idem

- (2) Each report of the Auditor General under subsection (1) shall call attention to anything that he considers to be of significance and of a nature that should be brought to the attention of the House of Commons, including any cases in which he has observed that
 - (a) accounts have not been faithfully and properly maintained or public money has not been fully accounted for or paid, where so required by law, into the Consolidated Revenue Fund;
 - (b) essential records have not been maintained or the rules and procedures applied have been insufficient to safeguard and control public property, to secure an effective check on the assessment, collection and proper allocation of the revenue and to ensure that expenditures have been made only as authorized;
 - (c) money has been expended other than for purposes for which it was appropriated by Parliament;
 - (d) money has been expended without due regard to economy or efficiency;
 - (e) satisfactory procedures have not been established to measure and report the effectiveness of programs, where such procedures could appropriately and reasonably be implemented; or
 - (f) money has been expended without due regard to the environmental effects of those expenditures in the context of sustainable development.

STAFF OF THE AUDITOR GENERAL

Appointment of Commissioner

15.1 (1) The Auditor General shall, in accordance with the *Public Service Employment* Act, appoint a senior officer to be called the Commissioner of the Environment and Sustainable Development who shall report directly to the Auditor General.

Commissioner's duties

(2) The Commissioner shall assist the Auditor General in performing the duties of the Auditor General set out in this Act that relate to the environment and sustainable development.

SUSTAINABLE DEVELOPMENT

Purpose

- 21.1 In addition to carrying out the functions referred to in subsection 23(3), the purpose of the Commissioner is to provide sustainable development monitoring and reporting on the progress of category I departments towards sustainable development, which is a continually evolving concept based on the integration of social, economic and environmental concerns, and which may be achieved by, among other things,
 - (a) the integration of the environment and the economy;
 - (b) protecting the health of Canadians;
 - (c) protecting ecosystems;
 - (d) meeting international obligations;

- (e) promoting equity;
- (f) an integrated approach to planning and making decisions that takes into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options;
- (g) preventing pollution; and
- (h) respect for nature and the needs of future generations.

Petitions received

22. (1) Where the Auditor General receives a petition in writing from a resident of Canada about an environmental matter in the context of sustainable development that is the responsibility of a category I department, the Auditor General shall make a record of the petition and forward the petition within fifteen days after the day on which it is received to the appropriate Minister for the department.

Acknowledgement to be sent

(2) Within fifteen days after the day on which the Minister receives the petition from the Auditor General, the Minister shall send to the person who made the petition an acknowledgement of receipt of the petition and shall send a copy of the acknowledgement to the Auditor General.

Minister to respond

- (3) The Minister shall consider the petition and send to the person who made it a reply that responds to it, and shall send a copy of the reply to the Auditor General, within
 - (a) one hundred and twenty days after the day on which the Minister receives the petition from the Auditor General; or
 - (b) any longer time, where the Minister personally, within those one hundred and twenty days, notifies the person who made the petition that it is not possible to reply within those one hundred and twenty days and sends a copy of that notification to the Auditor General.

Multiple petitioners

(4) Where the petition is from more than one person, it is sufficient for the Minister to send the acknowledgement and reply, and the notification, if any, to one or more of the petitioners rather than to all of them.

Duty to monitor

- **23.** (1) The Commissioner shall make any examinations and inquiries that the Commissioner considers necessary in order to monitor
 - (a) the extent to which category I departments have contributed to meeting the targets set out in the Federal Sustainable Development Strategy and have met the objectives, and implemented the plans, set out in their own sustainable development strategies laid before the Houses of Parliament under section 11 of the Federal Sustainable Development Act; and
 - (b) the replies by Ministers required by subsection 22(3).

Commissioner's report

- (2) The Commissioner shall, on behalf of the Auditor General, report annually to Parliament concerning anything that the Commissioner considers should be brought to the attention of Parliament in relation to environmental and other aspects of sustainable development, including
 - (a) the extent to which category I departments have contributed to meeting the targets set out in the Federal Sustainable Development Strategy and have met the objectives, and implemented the plans, set out in their own sustainable development strategies laid before the Houses of Parliament under section 11 of the Federal Sustainable Development Act;
 - (b) the number of petitions recorded as required by subsection 22(1), the subject-matter of the petitions and their status; and
 - (c) the exercising of the authority of the Governor in Council under subsections 11(3) and (4) of the Federal Sustainable Development Act.

Duty to examine

(3) The Commissioner shall examine the report required under subsection 7(2) of the Federal Sustainable Development Act in order to assess the fairness of the information contained in the report with respect to the progress of the federal government in implementing the Federal Sustainable Development Strategy and meeting its targets.

Duty to report

(4) The results of any assessment conducted under subsection (3) shall be included in the report referred to in subsection (2) or in the annual report, or in any of the three additional reports, referred to in subsection 7(1).

Submission and tabling of report

(5) The report required by subsection (2) shall be submitted to the Speakers of the Senate and the House of Commons and the Speakers shall lay it before their respective Houses on any of the next 15 days on which that House is sitting after the Speaker receives the report.



Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

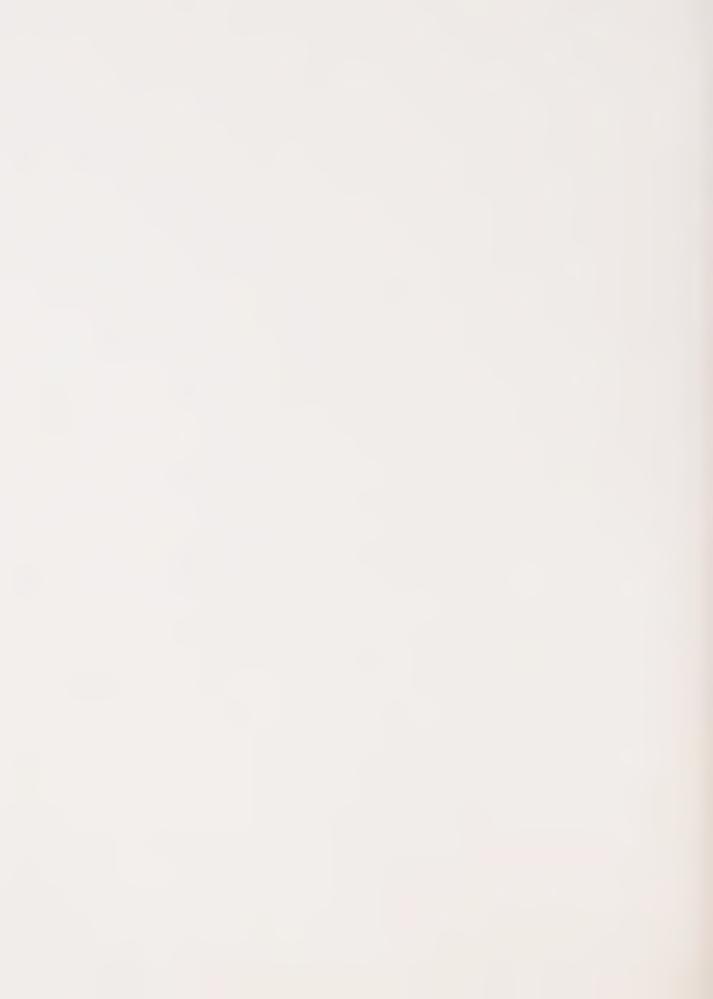
A Study of Federal Support to the Fossil Fuel Sector

AG 700 - E57



Report of the Commissioner of the Environment and Sustainable Development







Report of the Commissioner of the Environment and Sustainable Development

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CHAPTER 5

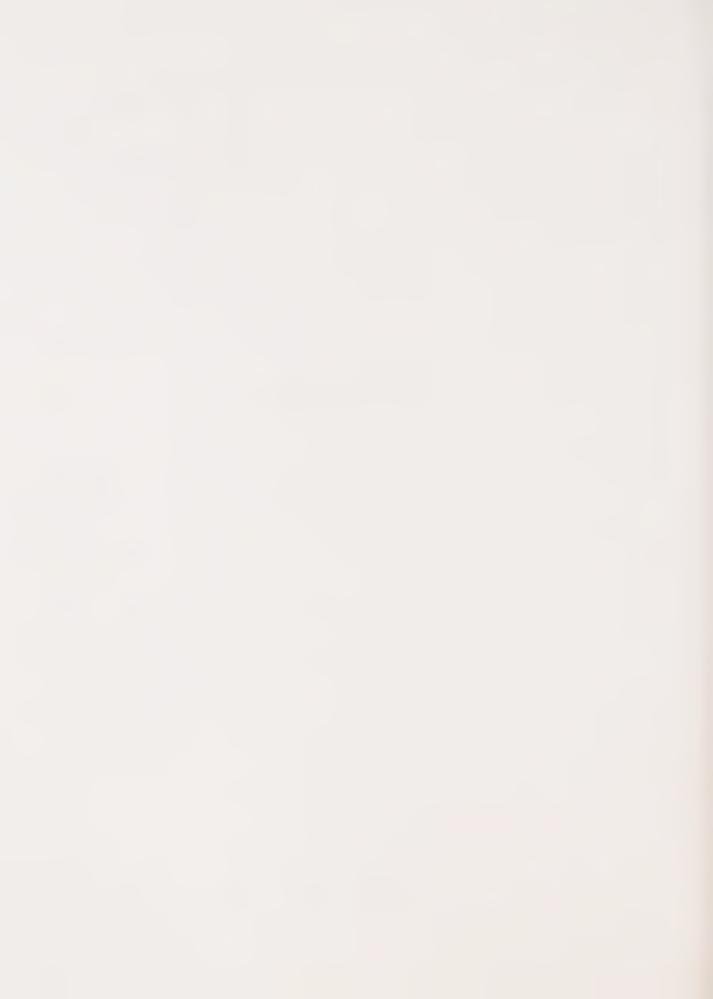


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Part I—Environmental Petitions Annual Report

Introduction

Highlights

- 5.1 The highlights of this annual report include the following:
 - Issues raised by petitioners. The report provides details on some of the issues raised by Canadians in environmental petitions in the past year. These issues include the federal government's action and plans related to climate change, the government's preparation of its position for Rio + 20, and concerns about pesticides (including their registration, labelling, and use).
 - Departmental performance. The report summarizes departmental performance in responding to petitions. We are pleased to report that departments responded on time to all petitions this year.
 - Petitioner feedback. Recent petitioner feedback received indicated that petitioners continue to be dissatisfied with departmental responses, though some improvement was noted since we last reported on petitioner feedback in 2010.

 Nevertheless, three quarters of the petitioners who provided feedback rated their experience with the petitions process as satisfactory, a substantial improvement from 2010.
 - Use of petitions and responses. The Office continues to use petitions and departmental responses in carrying out its work.

Focus of the annual report

- 5.2 The purpose of this annual report is to inform Parliament and Canadians about the number, nature, and status of petitions and responses received between 1 July 2011 and 30 June 2012, as required by section 23 of the *Auditor General Act*. The report also highlights good practices in the petitions process, discusses petitioners' feedback about departmental responses, and explains how petitions and ministerial responses can inform the work of our Office.
- 5.3 More details are provided in About the Annual Report and the Petitions Process at the end of this chapter.

Rio + 20—The United Nations Conference on Sustainable Development that was held in Rio de Janeiro, Brazil, in June 2012. It brought together governments, international institutions, and major groups to agree on a range of smart measures that can reduce poverty while promoting decent jobs, clean energy, and a more sustainable and fair use of resources.

Petitions and Responses

Petitions received

Petitions catalogue—The petitions catalogue contains petitions received under Section 22 of the Auditor General Act, and the ministerial responses to those petitions. It is available on the Office of the Auditor General website (www.oag-bvg.gc.ca).

Social media- - A video on the environmental petitions process is available on the OAG Yaulube channel (http://www.youtube.com/user/OAGBVG). In addition, you can follow us on livitter at CESD_CEDD

Follow-up petition —A petition submitted after receiving the response to an initial petition. It can be submitted immediately to ask additional questions or to seek clarification, or in the future to determine the status of the same and progress made by departments and

- 5.4 During this year's reporting period (1 July 2011 to 30 June 2012), the Office of the Auditor General of Canada received 23 environmental petitions, compared with 25 last year and 18 the year before. The Appendix presents an overview of petitions activity during the reporting period, including petition summaries. After tabling the petitions in Parliament and with the consent of the petitioners, the Office posts the petitions and responses in the petitions catalogue on our website.
- environmental issues, including those "close to home" and those of national interest. The issues raised in environmental petitions and the related departmental responses solicit interest, as indicated by the number of visits to the online petitions catalogue (about 50,000 visitors during this year's reporting period). The Office's petitions team continues to use a variety of outreach activities to inform Canadians about the process. These include social media, such as Twitter and YouTube, as well as online webinars and public presentations in various parts of the country.

Groups, including environmental organizations, submitted the majority of petitions

- 5.6 About half the petitions received this year (Exhibit 5.1) originated in Ontario (10 petitions plus 2 submitted jointly with residents of other provinces). Residents of British Columbia (8 petitions), Quebec (2 petitions plus 1 submitted jointly), Nova Scotia (1 petition), and Manitoba (1 submitted jointly) accounted for the rest.
- 5.7 In contrast to previous years, community associations, environmental organizations, and other groups of Canadian residents submitted about two thirds of petitions this year—15 of this year's 23 petitions. The remaining petitions came from individuals. Past petitioners submitted about half of this year's total; these included 2 follow-up petitions.

Petitions dealt with a diversity of topics, most often related to toxic substances, health, fisheries, and water issues

5.8 This year's petitions dealt with 23 different topics. Summaries are provided in the Appendix. The topics included questions about environmental assessment of a highway expansion project in Ontario

Exhibit 5.1 Petitions came from five provinces (1 July 2011 to 30 June 2012)



Petition No	. Topic	Petition No.	Торіс	
301D	Follow-up petition on the alleged misinterpretation of exclusion list conditions under the <i>Canadian Environmental Assessment Act</i> related to the construction of a communications tower in Pontiac,	329	Government of Canada actions and plans for climate change, environmental accounts, fossil fuel subsidies, fair trade procurement, and public consultation in preparing the government's position for Rio+20	
310B	Quebec Follow-up on the health and environmental impact of	330	Federal environmental assessment of a highway expansion project in Ontario	
319	endocrine disrupting substances in cosmetics Potential impact on amphibians and fish due to the	331	Funding for endangered freshwater fish under the Habitat Stewardship Program	
	application of pesticides in the shoreline and wetlands of the Great Lakes	332	Alleged perfluorocarbon contamination at the Hamilton International Airport	
320	The pesticide evaluation process under the Pest Control Products Act	333	Federal support to facilitate a Property Assessed Payments for Energy Retrofits program	
321	The impact of pesticides on the health of farm workers and their families	334	Environmental effects monitoring information and reports related to the <i>Metal Mining Effluent Regulations</i>	
322	Regulatory requirements for developmental toxicity testing of new and existing chemicals	335	Energy efficiency standards for domestic gas water heaters	
323	Environmental assessment of finfish (salmon) aquaculture in Nova Scotia	336	Federal policy, regulation, and approval regime for oil tankers in British Columbia	
324	Concerns about the re-evaluation of the pesticide dimethoate	337	Progress in completing the Bowie Seamount Marine Protected Area management plan and in establishing a	
325	Use of the Cosmetic Ingredient Hotlist to manage		national system of marine protected areas	
	potentially toxic and carcinogenic substances in cosmetics	338	Alleged discharge of contaminated water into a drainage ditch that empties into Lake Ontario	
326	Effectiveness of pollution prevention aspects of the St. Lawrence Action Plan	339	Potential impact on the environment of an animal-based diet, and potential health and environmental benefits of moving to a plant-based diet	
327	Environmental assessment of a project to deliver jet fuel to the Vancouver International Airport			
328	Implementation status of the Wastewater Systems Effluent Regulations			

Source: Petitions submitted to the Auditor General of Canada. Summaries appear in the Appendix.

Endocrine disrupting substances—External agents that interfere with the production, release, transport, metabolism, binding, action, or elimination of the natural hormones in the body responsible for the maintenance of internal equilibrium and the regulation of developmental processes

Perfluorocarbons - A group of human-made chemicals composed of carbon and fluorine only Perfluorooctane Sulfonate (PFOS), part of this chemical group was used for fighting fuel fire.

(Petition 330), funding for projects in support of endangered freshwater fish in British Columbia (Petition 331), and the federal policy, regulation, and approval regime for oil tankers off the southern coast of British Columbia (Petition 336).

- 5.9 In addition to the specific topics addressed, a few petitions explored issues from different points of view. For example, four petitions were received on different aspects of pesticides, including their registration, labelling, and use (Petitions 319, 320, 321, and 324). We also received two petitions related to potentially toxic substances in personal care products. One was on Health Canada's Cosmetic Ingredient Hotlist (Petition 325), and the other was a follow-up petition on endocrine disrupting substances in cosmetics (Petition 310B).
- 5.10 Petition 310B was one of the follow-up petitions received on topics raised in the previous year. The petitioners claimed that Health Canada's response to the original petition was not accurate because it took into account only the first of four European studies on this subject, and they asked for an updated answer. Health Canada's response addressed this concern. In another example, Petition 301D, concerning an alleged misinterpretation of exclusion list conditions for communications towers under the Canadian Environmental Assessment Act, the petitioner claimed that while Industry Canada had responded to his previous petitions, it had not answered his specific question about the size of the antenna footprint. In its response to the follow-up petition, Industry Canada provided the specific information requested.
- **5.11** When petitions are received, we review them to identify the key issues. To help Web users with their searches, our online catalogue lists petitions by number, responding federal institution, and issue.
- **5.12** Based on our review, the issues covered most frequently in petitions this year were the following:
 - Toxic substances. Petitions with this issue as the primary focus included a petition on the government's oversight of toxic substances in cosmetics through the use of the Cosmetic Ingredient Hotlist as a management tool (Petition 325), and another on an alleged perfluorocarbon contamination near the Hamilton International Airport (Petition 332). Petitions with toxic substances as a secondary issue included several on pesticides (Petitions 319, 320, and 321), one on environmental monitoring information related to the Metal Mining Effluent Regulations (Petition 334), and one on a project to deliver jet fuel to the Vancouver International Airport (Petition 327).

- Human and environmental health. Petitions concerning this issue included many of those that raised concerns about toxic substances. They also included a petition on the health and environmental benefits of moving from an animal-based diet to a plant-based diet (Petition 339).
- Fisheries and water. Petitions with fisheries and water issues included one on completing the Bowie Seamount Marine Protected Area Management Plan (Petition 337), another on the effectiveness of pollution prevention aspects of the St. Lawrence Action Plan (Petition 326), one on the environmental assessment of finfish aquaculture in Nova Scotia (Petition 323), and one on the status of the Wastewater Systems Effluent Regulations (Petition 328).

The most common theme this year was due process

- 5.13 Among petitions that deal with different topics and issues, there are often common themes. The most common theme again this year was due process, which is the manner in which the federal government applies its policies and procedures. Petitioners have raised this concern in petitions that dealt with environmental assessments as well as in petitions requesting information about the status of program or policy implementation. Petitioners asked questions about the interpretation of assessment criteria and about whether full consideration is given to all potential issues, the extent of public consultation, and decision-making processes. The following examples describe some of these concerns.
- **5.14** Funding of projects for protection of endangered aquatic species in British Columbia. In Petition 331, the petitioner inquired about the federal government's decision to discontinue funding for its projects to protect endangered aquatic species in British Columbia. The petitioner sought information on its funding request, asking, "What was the ranking of the funding proposal within Pacific—Yukon Region overall and within the pool of applicants concerning aquatic species?"
- **5.15** In its response, Fisheries and Oceans Canada said that with respect to the project "relating to the Nooksack dace and Salish sucker, the proposal was ranked 18th out of the 40 recommended Habitat Stewardship Program projects (both aquatic and terrestrial) from Pacific—Yukon Region for fiscal year 2011–12. Among the applications concerning aquatic species, this project received the second highest score, with two other proposals receiving the same

score. This particular project was recommended for funding by the Habitat Stewardship Program National Steering Committee." The Department also explained that "the final decision on whether funding should be granted to a given Habitat Stewardship Program proposal falls under the authority of the Minister of the Environment."

- 5.16 Public consultation for the government's position for Rio+20. In Petition 329, the petitioners inquired about the public consultation process for the government's preparation of its position for Rio+20. They asked, "why did the government of Canada not consult the Canadian public before making its submission to the UNCSD [United Nations Conference on Sustainable Development] 2012 Zero Draft Document...?"
- Foreign Affairs and International Trade Canada replied that the national submission was "the result of extensive consultations across the federal government on how best to promote Canada's interests at Rio+20 and make a significant contribution to the Conference. In 2010, Environment Canada submitted the Government's Federal Sustainable Development Strategy (FSDS) to the Canadian public for review and comment over a period of 120 days. As well, the Minister of the Environment appointed a Sustainable Development Advisory Council made up of representatives of every province and territory who represented the interests of Aboriginal people, environment nongovernmental organizations (NGOs), labour and business. The FSDS articulates Canada's environmental sustainability priorities and our progress in achieving them. The inputs received during this process continue to inform the government's approach to sustainable development, including [its position] for Rio+20. This process is replicated at least every three years as a new FSDS is developed. The next consultation period is scheduled for 2013."

Other common themes were transparency and public access to information

- 5.18 Petitioners also inquired about government openness in decision making and about the availability of environmental information. Examples include Petition 334, in which the submitting organization asked about public access to information on environmental effects monitoring (EEM) of metal mining, and Petition 324, which discussed the re-evaluation of a pesticide, as described below.
- **5.19** The organization that submitted Petition 324 provided its comments on Health Canada's re-evaluation of the pesticide dimethoate as part of the Pest Management Regulatory Agency's (PMRA) normal public consultation process. The petitioner also

submitted the same document as an environmental petition because the petitioner "would appreciate receiving a response to the points raised in these submissions, and this approach will ensure such a response."

5.20 While addressing the public's desire for openness and transparency of government decisions by requiring a response from the department, using the environmental petitions process in this manner presented some challenges. One of these was the timing of the petition response compared with the timeline for processing comments on the pesticide re-evaluation. As Health Canada explained in its response. "the review of [comments and data] will not be completed before the response to this petition is due ... therefore, the response to the petition may be limited in certain respects given that the proposed decision is still subject to change...." Petitioners who may wish to use a similar approach should be aware of this potential constraint to receiving a complete response.

The majority of petitions were national in scope

- 5.21 This year, unlike last year, the majority of petitions (12) focused on national issues, such as those dealing with government policy. regulation, and the overall implementation of government programs. Examples include petitions related to the regulation, labelling, and use of pesticides (Petitions 320, 321, and 324), government action and plans on the preparation of its position for Rio + 20 (Petition 329), and energy efficiency standards for domestic gas water heaters (Petition 335).
- 5.22 Petitions with a local or regional scope are those that focus on environmental impacts of specific projects and events or on environmental issues that may affect a broader area of the country. They often deal with concerns about environmental assessment of specific projects, such as a project to deliver jet fuel to the Vancouver International Airport (Petition 327). They also deal with local events, such as the alleged discharge of contaminated water into a drainage ditch that empties into Lake Ontario (Petition 338), or with a particular region, such as the petition on the St. Lawrence Action Plan (Petition 326).
- 5.23 There are also petitions that use examples of local cases to raise broader questions about policy or program implementation at the national level. For example, in Petition 332, the petitioner asked about the environmental impact of alleged perfluorocarbon contamination at the Hamilton International Airport, where the substances had been

used as a fire-fighting agent, and also asked the government about the potential for such contamination at other federal sites across the country.

Responses received

- 5.24 The Auditor General Act requires responsible ministers to consider each petition and reply in writing within 120 calendar days after a petition is received. As a result, some of the responses covered in this report were for petitions received in the previous reporting period. This reason accounts for the difference in the number of petitions submitted (23) and the number of petitions for which responses were due this year (24, which includes 9 petitions from the previous year). Responses for the 8 petitions received toward the end of this reporting period will be covered in next year's report.
- 5.25 Since most petitions were directed to more than one responsible minister, 17 departments and agencies provided a total of 64 responses to the 24 petitions for which responses were due this year. Environment Canada typically ranks first in the number of petitions received; this year it responded to 18 of the 24 petitions. Health Canada ranked second, responding to 12 petitions, followed by Fisheries and Oceans Canada, responding to 11 petitions.

Departments responded on time to all petitions this year

- 5.26 We are pleased to report that departments responded on time to all petitions this year (Exhibit 5.2). This number compares to last year's on-time response rate of 92 percent and the previous year's rate of 93 percent. For the three departments responsible for the largest number of responses, Environment Canada had a 100 percent on-time response rate for the third year in a row, and both Health Canada and Fisheries and Oceans Canada were on time the past four years.
- 5.27 Although departments and agencies have a statutory obligation to respond within 120 days, the response is not considered to be late if the responsible minister sends a written notification of delay within this period. No notifications of delay were sent this year.

Most responses were complete and relevant

5.28 The 24 petitions that departments responded to this year contained about 275 questions. Questions and responses varied considerably in length and level of detail. Paragraphs 5.40 to 5.58, which describe some of the environmental issues raised in petitions and the federal government responses, provide examples of the types of questions and responses.

- **5.29** As part of its monitoring role, the Office's petitions team routinely reviews each petition response. We have two primary considerations in our reviews:
 - Completeness. Is every question addressed?
 - Relevance. Are the responses relevant to the questions?
- **5.30** We also look for clarity in responses. For example, if the responding department disagrees with information or views that are central to the petition, we consider whether its response includes a clear explanation of the reason for the disagreement. This is the type of observation we may raise with departments when we meet periodically to discuss the petitions process.

Exhibit 5.2 Departments and agencies responded on time to all petitions

Department or Agency	Number of responses due	Number of late responses	Percentage on time (%)	Notifications of delay*
Aboriginal Affairs and Northern Development Canada	2	0	100	0
Agriculture and Agri-Food Canada	1	0	100	0
Atlantic Canada Opportunities Agency	1	0	100	0
Canadian Heritage	1	0	100	0
Environment Canada	18	0	100	0
Finance Canada	1	0	100	0
Fisheries and Oceans Canada	11	0	100	0
Foreign Affairs and International Trade Canada	1 .	0	100	0
Health Canada	12	0	100	0
Industry Canada	3	0	100	0
Justice Canada	1	0	100	0
National Defence	1	0	100	0
Natural Resources Canada	2	0	100	0
Parks Canada	1	0	100	0
Public Works and Government Services Canada	1	0	100	0
Transport Canada	6	0	100	0
Treasury Board of Canada Secretariat	1	0	100	0
Total	64	0	100	0

^{*} A response is not considered to be late if the petitioner is notified of an expected delay before the due date.

Developmental toxicity—Occurrence of adverse effects on the developing organism that may result from exposure before conception (either parent), during prenatal development, or during postnatal development up to the time of sexual maturation. Adverse developmental effects may be detected at any point in the lifespan of the organism.

- 5.31 As in past years, this year we found that the majority of responses were complete and relevant. Moreover, some petition responses included considerable depth and detail—for example, the responses to petition 330 (see paragraphs 5.56 to 5.58) and petition 322. In the latter petition, the petitioners were seeking information about Canadian regulatory requirements for developmental toxicity testing. Health Canada provided a joint response (with Environment Canada) that was informative and well structured. While the response used technical language, it was appropriate given the technical nature of the questions posed by the petitioners.
- 5.32 We noted that Fisheries and Oceans Canada had stopped its past practice of providing petitioners with the names and telephone numbers of departmental contacts in case the petitioners require additional information. We had previously reported that we believed this to be a good practice that demonstrated openness and transparency. In September 2012, Fisheries and Oceans Canada informed us that it will provide a contact name when appropriate. We encourage other departments and agencies to consider adopting a similar practice.

The feedback process reveals petitioners' views about the quality of responses

- **5.33** Petition responses reflect the government's policy and program objectives, and the responding departments' implementation and management of these objectives. These may not align with the views of petitioners.
- 5.34 In 2009, we implemented a process to solicit petitioner feedback, including petitioners' views on departmental responses to petitions and on the petitions process itself. We send a feedback questionnaire to petitioners once all departmental responses to their petition have been received. In 2010, we reported our analysis of the 25 feedback replies we had received by that time (a response rate of one third of the questionnaires sent to petitioners). This year, we provide an update of petitioner feedback based on the 20 replies received since our last analysis (a response rate of one half of the questionnaires sent since our 2010 analysis). Petitioner feedback is important to us as it can provide information that is useful in helping to identify strengths and areas that could be improved in the petitions process.
- 5.35 Reasons for submitting petitions. Three quarters of the petitioners who replied to the feedback questionnaire since 2010 indicated that they had previously contacted the federal government about the petition issue before they submitted their petition; this result

compared with the approximately two thirds we reported in 2010. In about three quarters of the more recent replies, the petitioners were not satisfied with the outcome of that contact, and in almost all of those cases, this dissatisfaction was a motivation for using the petitions process.

- 5.36 In addition, about four fifths of new respondents indicated that their petitions were submitted to obtain specific information and formal commitments, to establish a public record of the government's response to environmental issues, and to request action from the federal government. This result was consistent with what we reported in 2010. In our discussions with petitioners, we remind them that the process requires departments only to respond to the petitions; it does not require them to take action to deal with the issues.
- 5.37 Petitioners' views on departmental responses. In addition to asking petitioners for feedback related to their petition submission, we ask them to provide their views on each of the individual departmental responses to their petition. Since more than one department may provide a response to a petition, we received 37 new replies from petitioners noting their degree of satisfaction with the individual departmental responses to their petitions. While over two thirds (26 of 37) of these replies indicated that petitioners found the departmental responses to be somewhat or very unsatisfactory, this result represented an improvement from the approximately four fifths we reported in 2010. In addition, the proportion of very unsatisfactory departmental responses decreased to about two fifths (14 of 37), compared with about two thirds (16 of 24) in 2010. Petitioners also found more responses to be somewhat or very satisfactory (11 of 37) compared with 2010 (2 of 24).
- **5.38** Petitioners consistently rated some specific aspects of the government's response, such as taking action or making specific commitments, as poor. Several petitioners expressed their disappointment that, in their view, the petitions process does not include a mechanism to ensure that departments take action on issues or provide responses that meet petitioners' expectations. One half of new respondents believe that their petition had not had any effect and that none is anticipated.
- **5.39** Satisfaction with the petitions process. Contrary to petitioners' low level of satisfaction with departmental responses, about three quarters of the petitioners who provided recent replies to the questionnaire rated their experience with the petitions process as satisfactory. This feedback represents a substantial improvement from

our 2010 analysis. In addition, most petitioners indicated that they would consider submitting another environmental petition.

Environmental issues raised in petitions

- 5.40 In 2012, 190 governments, including Canada, met in Brazil for Rio+20, the United Nations Conference on Sustainable Development (UNCSD), which focused on the themes of a transition to a green economy and the institutional framework for sustainable development. In addition, 2012 represents the end of the first commitment period under the Kyoto Protocol, which set out an agenda for reducing global greenhouse gas emissions, in addition to bringing ongoing attention to mitigating those emissions. Domestically, the federal government introduced significant changes to federal environmental legislation through the Jobs, Growth and Long-term Prosperity Act; these changes included the new Canadian Environmental Assessment Act, 2012, and major changes to the Fisheries Act.
- 5.41 Environmental petitions submitted by Canadians in the past year reflect many of these significant environmental issues. For example, as described in paragraph 5.12, the health and environmental impact of toxic substances was frequently raised as an issue.
- **5.42** Part II of this annual report provides an update on the federal government's action related to its response to Petition 317. In this petition, the petitioners expressed concerns about toxicity of the chemicals used in hydraulic fracturing and the lack of public disclosure about the chemicals used in hydraulic fracturing.
- **5.43** Petitioners have also raised questions about issues such as climate change, biodiversity and fish habitat, and environmental assessment.
- effects of climate change. Canadians are concerned about the causes and effects of climate change and its potential impact on their lives. For example, in Petition 329, on government action and plans regarding climate change and the government's preparation of its position for Rio+20, the petitioner claims that "by abandoning the Kyoto Protocol, Canada has demonstrated that the Environment Minister did not go to Durban to negotiate in good faith, and sends a message to the world that our country does not care about the effects of climate change that are experienced in other countries and even in regions of our own." The petitioner asked, "bearing in mind that the decisions to ratify the Kyoto Protocol and to adopt domestic legislation—the Kyoto Implementation Act, which received royal assent in 2007—were discussed in the House of Commons, why was the decision to withdraw from Kyoto not similarly debated and voted upon in the House?"

- 5.45 The Minister of the Environment replied that "withdrawal is a legal provision under the Kyoto Protocol itself under Article 27, and can be exercised unilaterally by a Kyoto Party at any time. Withdrawal is a policy decision to be made by the government of the day. It is not a legislative act to be made by Parliament. To effect withdrawal, a notification of intention to withdraw must be transmitted to the Secretary-General of the United Nations. Within Canada, the Minister of Foreign Affairs was authorized to submit this notification of withdrawal by an order-in-council signed by the Governor General of Canada."
- 5.46 Biodiversity, ecosystems, and fish habitat. As described on the federal—provincial biodiversity website, biological diversity refers to the variety of species and ecosystems on Earth and the ecological processes of which they are a part. It encompasses all living species on Earth and their relationships to each other. In their petitions, petitioners often make the link between human activity, such as the use of pesticides, and its potential impact on habitat, both aquatic and terrestrial, and on specific species. Petitioners also question how those impacts could affect biodiversity and ecosystems.
- 5.47 In Petition 315, the petitioner asked questions about a convention centre development project near the Ottawa International Airport and its potential impact on fish habitat, endangered species, and wetlands. The petitioner claimed that the development would destroy over 12 hectares of wetland and the headwaters of Sawmill Creek. The petitioner asked Fisheries and Oceans Canada to explain "how a peripheral ditch that will receive storm water and snow melt and accompanying pollutants—for example, salt and oil from a 2,000 car parking lot—[can] be approved as compensation for the obliteration of two water channels that bore clean water." The petitioner also asked Environment Canada "why [it] has not invoked the Blanding's Turtle recovery strategy on these federal wetlands, as outlined in the *Species at Risk Act.*"
- 5.48 In its response, Fisheries and Oceans Canada indicated that "the Rideau Valley Conservation Authority [RVCA] reviewed the proponent's plan to realign a watercourse and to establish fish habitat features in the realigned watercourse as mitigation. Mitigation such as a low flow channel for fish access, pools and runs, and gently sloped vegetated banks were proposed. According to the [RVCA's] review, the realigned channel will provide quality fish habitat to satisfy the life processes of the indigenous fish found in the upper reaches of Sawmill Creek."

- 5.49 Regarding the question about the recovery strategy for Blanding's turtles, Environment Canada replied that "under the federal Species at Risk Act, critical habitat has not yet been identified for the Blanding's turtle. At present, critical habitat criteria are being drafted for this species, and the available information on Blanding's turtle locations and populations will then be assessed against these criteria. ... Subsequently, critical habitat will be identified in a final recovery strategy for the Blanding's turtle." The Department added that "critical habitat prohibitions under the Act do not currently apply, given that critical habitat has not yet been identified for this species in a final recovery strategy."
- In Petition 319, the petitioner expressed concern about the use of pesticides on the shoreline of the Great Lakes and the potential impact on amphibians and fish. In particular, the petitioner noted that a study published through the University of Pittsburgh had pointed out that "it is temporary, shallow bodies of water—depressions only a few inches deep and 10 or 20 feet long—that produce most of the amphibians in the country. Anyone spraying pesticides ... would probably not avoid such puddles because they appear to be inconsequential." The petitioner added that the research noted that "many species breed only in temporary wetlands." The petitioner asked Fisheries and Oceans Canada whether "some water [could] be identified as 'temporary' yet fit the definition of Sensitive Aquatic Habitat as per the [herbicide product] label or Fish Habitat as per the Fisheries Act."

5.51 In its response, Fisheries and Oceans Canada said that "fish habitat is defined in section 34 of the Fisheries Act as 'spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes'. 'Fish habitat', as defined under section 34 of the Fisheries Act, does not differentiate between 'sensitive aquatic habitat' and does not distinguish between 'temporary' or 'permanent' water bodies. The determination of what constitutes fish habitat under the Fisheries Act is independent of the Pest Management Regulatory Agency's habitat and water classification scheme. Although it is unlikely that a water body that is identified as 'temporary' by the Pest Management Regulatory Agency provides fish habitat, it is possible that it could be considered fish habitat as defined by the Fisheries Act. The characteristics and circumstances of each site will determine if a temporary water body fits the definition of fish habitat under the Fisheries Act. It cannot categorically be stated that temporary waters are or are not considered fish habitat under the Fisheries Act."

Amended definition of fish habitat

14

- 5.52 Environmental assessment. According to the Canadian Environmental Assessment Agency, environmental assessments support sustainable development by helping to eliminate or reduce a project's potential impact on the environment before it begins and ensuring that mitigation measures are applied once the project is initiated. Environmental assessments support informed decision making. Petitioners raise concerns about the way the federal government carries out its environmental assessments, including the extent of public consultation, the full consideration of all potential issues, harmonizing federal assessments with those of provinces, and the timeliness of assessments.
- 5.53 In Petition 327, the petitioner expressed concerns about how the environmental assessment was carried out for a project to deliver jet fuel to the Vancouver International Airport. In particular, the petitioner asked "why the federal government seems to have allowed such a development to be proposed without a 'proper' review under the federal Canadian Environmental Assessment Act, and, above all, why it allowed delegation of federal responsibilities to the [Vancouver Fraser Port Authority] and the British Columbia Environmental [Assessment] Office."
- 5.54 Environment Canada responded that "pursuant to the Canada Port Authority Environmental Assessment Regulations under the Canadian Environmental Assessment Act, the Vancouver Fraser Port Authority is required to ensure that a screening is conducted for the project. The project is also subject to the environmental assessment requirements of the Government of British Columbia. The Vancouver Fraser Port Authority is conducting the federal environmental assessment cooperatively with the provincial process in a way that is consistent with the principles of the Canada–British Columbia Agreement for Environmental Assessment Cooperation."
- 5.55 In its response, Fisheries and Oceans Canada states that "as a federal authority, Fisheries and Oceans Canada is providing input into the environmental assessment in the form of advice on appropriate mitigation measures to be applied during construction to prevent impacts to fish and fish habitat. This advice is given in accordance with the *Fisheries Act* and the Department of Fisheries and Oceans Policy for the Management of Fish Habitat. Fisheries and Oceans Canada retains its legal responsibilities under the *Fisheries Act* when a harmonized environmental assessment with the Province of British Columbia, or any other province or territory, is taking place...."

- 5.56 In Petition 330, the petitioner wanted to know why the federal government chose to assess the entire expansion of Ontario Highway 69 as a single project, rather than by phase, and asked why the federal government had not been able to make a decision on the environmental assessment.
- 5.57 In the joint response, Transport Canada explained that "the Ontario Ministry of Transportation's proposal to four-lane 102 kilometres of Highway 69 from approximately Nobel to Estaire was originally to be the subject of several federal environmental assessments, based on various federal interests. ... As a result of [the Supreme Court of Canada's 21 January 2010] decision, in June 2010 Transport Canada, Fisheries and Oceans Canada and Aboriginal Affairs and Northern Development Canada, the federal responsible authorities, commenced a single federal environmental assessment of the entire 102 kilometres.... With the federal environmental assessment considering the entire 102 kilometres, and the Ontario Ministry of Transportation detail design process proceeding in distinct segments, coordination of information requirements presented a significant challenge. As a result, the Ontario Ministry of Transportation made multiple requests for federal responsible authorities to consider a phased approach."
- 5.58 Transport Canada added that "On 21 October 2011, after full consideration of all studies and consultation activities conducted and available at that time, federal responsible authorities indicated in a letter to the Ontario Ministry of Transportation that they did not have adequate information on which to base a determination on the current environmental assessment for the entire 102 kilometres. In the same letter, federal responsible authorities indicated that they were willing to consider the Ontario Ministry of Transportation's request for a phased approach upon receipt of necessary information...."

Petitions and the Office's work

5.59 The Office's work can be shaped by issues raised in petitions, including specific petition topics, broader environmental issues, and common themes. Recent work in our Office has benefited from knowledge gained through petitions and responses. For example, in the 2012 Fall Report of the Commissioner of the Environment and Sustainable Development, Chapter 3, Marine Protected Areas, we examined the federal government's action regarding the development of the Bowie Seamount Marine Protected Area. This was the subject of Petition 337, in which the petitioner asked Fisheries and Oceans Canada about the status of the Bowie Seamount Marine Protected

Area's management plan, as well as about the Department's commitment to establish a national system of marine protected areas.

- In addition, as part of its monitoring role, the Office may follow up on issues raised in federal government responses to environmental petitions. Since 2010, we have received three petitions (307, 308, and 317) in which the petitioners expressed concerns about toxicity of the chemicals used in hydraulic fracturing and the lack of public disclosure about the chemicals used in hydraulic fracturing. The Minister of the Environment and the Minister of Health responded to these petitions. In his October 2011 response to Petition 317, the Minister of the Environment indicated that the Department was exploring options to help it gain a better understanding of the substances contained in hydraulic fracturing fluid, and that the Department was already reviewing the reporting requirements of the National Pollutant Release Inventory (NPRI) for the oil and gas sector to consider changes that would capture more information on oil and gas activities.
- **5.61** Part II of this annual report provides an update on developments since the Minister of the Environment's response to Petition 317. We interviewed and obtained documentation from Environment Canada and Health Canada officials to follow up on
 - the status of the National Pollutant Release Inventory review that Environment Canada indicated was under way in its October 2011 response to Petition 317, and
 - actions taken by the departments to better understand substances used in hydraulic fracturing.

Conclusion

- 5.62 The environmental petitions process remains a unique way for Canadians to present their concerns to federal ministers. Through the process, they can also request information and ask for commitments to action.
- The Office of the Auditor General of Canada received 23 petitions this year, compared with 25 last year and 18 the year before. There continues to be a diversity of topics and issues in the petitions received.
- **5.64** We are pleased to report that departments responded on time to all petitions with responses due this year. This compares with last year's

- on-time response rate of 92 percent and the previous year's rate of 93 percent. For the three departments responsible for the largest number of responses, Environment Canada had a 100 percent on-time response rate for the third year in a row, and both Health Canada and Fisheries and Oceans Canada were on time the past four years.
- 5.65 We found that while most responses were complete and relevant, recent petitioner feedback received indicated that petitioners continue to be dissatisfied with departmental responses. However, some improvement was noted since we last reported on petitioner feedback in 2010. Nevertheless, three quarters of the petitioners who provided feedback rated their experience with the petitions process as satisfactory, a substantial improvement from our 2010 feedback analysis.
- **5.66** We will continue to work to promote high-quality petition responses. We will also continue to consider information from petitions and responses when we plan audits and studies. These actions, among others, are designed to help petitions play their part in informing the federal government's management of environmental issues.

Part II—Update on Government Responses to Petitions on Hydraulic Fracturing

Background

Sustainable Development (CESD) has received three petitions (307, 308, 317) that express concerns about toxicity of the chemicals used for hydraulic fracturing and the lack of public disclosure about the chemicals used for hydraulic fracturing (see the petitions catalogue on the Office of the Auditor General website (www.oag-bvg.gc.ca). As required, the ministers of Environment and Health have responded to these petitions. The Minister of the Environment's October 2011 response to petition 317 indicated that the Department was exploring options to help it gain a better understanding of the substances contained in hydraulic fracturing fluid, and that it was already reviewing the reporting requirements of the National Pollutant Release Inventory (NPRI) for the oil and gas sector to consider changes that would capture more information on oil and gas activities.

5.68 This is not an audit report. The following summary is intended to provide parliamentarians and petitioners with an update on developments since the ministers of the Environment and Health responded to the petitions.

- **5.69** We interviewed and obtained documentation from Environment Canada and Health Canada officials to follow up on
 - the status of the NPRI review that Environment Canada said was under way in its response to the 2011 petition (317), and
 - actions taken by the departments to better understand substances used in hydraulic fracturing.
- **5.70** In addition, we spoke to officials at the National Energy Board, provincial officials responsible for permitting oil and gas activities, industry associations, and experts in Canada and the United States.

National Pollutant Release Inventory (NPRI)—A publicly accessible database that is managed by Environment Canada. It contains information on annual on-site releases of specific substances to the air, water, and land, as well as disposals and off-site transfers for recycling that originate from industrial and institutional sources.

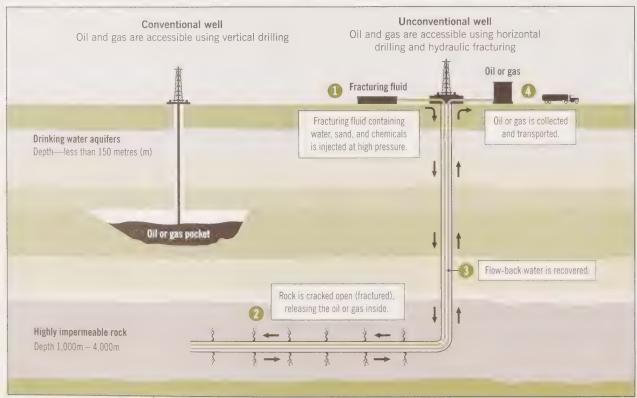
Hydraulic Fracturing in Canada

The hydraulic fracturing process

Unconventional oil and gas resources— Unconventional oil and gas are found in highly impermeable rock formations, which may require hydraulic fracturing to enhance their permeability. Tight gas, shale gas, and coal-bed 5.71 Hydraulic fracturing is a process that uses very high pressure to inject large volumes of fluid containing chemicals and agents, such as sand, into rock formations. This process fractures the rock and releases trapped oil and gas. The agents used in the process keep the formations open after fracturing to allow the oil or gas to flow to the well head.

5.72 In Canada, hydraulic fracturing dates back to the 1950s. In 2005, new technologies, including multi-stage fracturing and horizontal drilling, have made **unconventional oil and gas resources** commercially viable to recover. These new technologies have raised concerns because hydraulic fracturing for unconventional resources uses much larger volumes of water and chemicals than processes used for extracting conventional resources (Exhibit 5.3).

Exhibit 5.3 The hydraulic fracturing process



Note: Not to scale, and typical depths are indicated.

- 5.73 Fracturing fluid consists of water, sand, and chemicals that include friction reducers, biocides, solvents, surfactants, scale inhibitors, and acids (Exhibit 5.4). Waste (or flow-back water) from the process contains the substances injected into the well together with minerals and salts released from the fractured rock formation. The flow-back water may also include heavy metals and radioactive isotopes.
- 5.74 On average, fracturing a shale gas well requires 11 million litres of water. The chemicals make up between 0.5 percent and 2 percent of the fluid, or between 55,000 and 220,000 litres of chemicals per well. Between 50 and 80 percent of this fluid returns to the surface, where it can be reused or stored before being disposed of.

Exhibit 5.4 The role of various substances in the hydraulic fracturing process

Friction reducers—Minimize friction in the well.

Biocides—Eliminate bacteria that produce corrosive by-products.

Solvents—Extract impurities from natural gas and are used for clearing and de-icing.

Surfactants—Increase the viscosity of the fracturing fluid.

Scale inhibitors—Prevent deposits from forming in the well and surface equipment.

Acids—Dissolve minerals and initiate cracks in the rock formation.

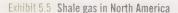
Production of unconventional resources

5.75 Estimates of the number of wells that have been fractured in Canada vary widely. The National Energy Board told us that since the 1950s, over 200,000 wells have been hydraulically fractured in western Canada. While comprehensive data is not available for each province, the British Columbia Oil and Gas Commission told us that more than 7,300 wells have been fractured in British Columbia since 2005, and that between 500 and 1,000 new wells are being permitted in the province each year, the majority of which will use hydraulic fracturing.

5.76 Deposits of shale gas exist in many regions of Canada (Exhibit 5.5). Current production is concentrated in Alberta and in British Columbia. Quebec and Nova Scotia are not permitting new hydraulic fracturing activities for shale gas pending reviews of the environmental impacts and the identification of best management practices.

Growth in the production of unconventional natural gas

5.77 Natural gas is one of the main sources of domestic energy in Canada—about 30 percent of Canada's energy needs are met by natural gas—and it represents an important export industry. Natural gas provided \$15 billion in export revenue to producers in 2010. According to Environment Canada, the supply portfolio for North American natural gas is shifting from being primarily made up of conventional sources to being dominated by unconventional sources. Shale gas is being referred to as a "game changer" or the "next big oil sands." According to National Energy Board published data, within the next 10 years, unconventional gas production is expected to increase by more than 50 percent and almost double over the next 20 years (Exhibit 5.6).





Source: Adapted from National Energy Board, A Primer for Understanding Canadian Shale Gas, 2009

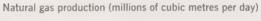
Industry guiding principles

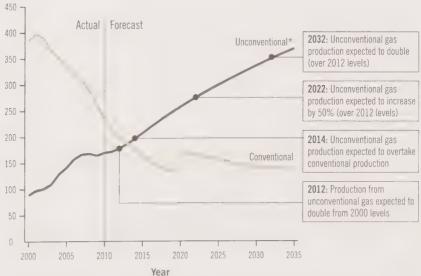
5.78 In September 2011, the Canadian Association of Petroleum Producers (CAPP), which represents member companies producing more than 90 percent of Canada's natural gas and crude oil, issued guiding principles for hydraulic fracturing. These principles are intended to guide water management and improve reporting on the use of water and fluids in unconventional gas resource development in Canada. In January 2012, CAPP announced six operating practices covering issues such as

- public disclosure of hydraulic fracturing substances,
- baseline groundwater testing, and
- well construction and quality assurance.

5.79 CAPP members developed the hydraulic fracturing practices voluntarily. According to the Association, these practices were developed to inform and complement regulations, not as a substitute for regulatory oversight.

Exhibit 5.6 Projected growth of unconventional natural gas production in Canada





^{*} Unconventional natural gas production is calculated using the National Energy Board's projections for shale gas, tight gas, and coal-bed methane production.

Source: Based on National Energy Board projections for natural gas production

Federal roles and responsibilities under the *Canadian Environmental Protection Act, 1999*

- 5.80 Under the Canadian Environmental Protection Act, 1999 (CEPA 1999), Health Canada and Environment Canada share the mandate for assessing whether substances used in Canada are toxic to human health or the environment. According to CEPA 1999, a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that
 - (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity,
 - (b) constitute or may constitute a danger to the environment on which life depends, or
 - (c) constitute or may constitute a danger in Canada to human life or health.
- 5.81 CEPA 1999 requires Environment Canada and Health Canada to develop control measures for substances determined to be toxic or capable of becoming toxic. Environment Canada also maintains the National Pollutant Release Inventory, which, as stated earlier, is a legislated, publicly accessible inventory of pollutant releases, disposals, and transfers for recycling.
- **5.82** In addition, under the *Pest Control Products Act*, Health Canada has the mandate to prevent unacceptable risks to people and the environment from the use of pest control products, such as biocides and antimicrobials. These chemicals are also used in fracturing fluid. Such products must be registered prior to import, sale, or use in Canada.

Follow-up on Petition Responses

Status of the National Pollutant Release Inventory review

- **5.83** We asked Environment Canada for an update on the status of its review of the National Pollutant Release Inventory (NPRI) that the Department said was under way in October 2011.
- 5.84 According to Environment Canada, the NPRI is a "major starting point for identifying and monitoring sources of pollution in Canada and in developing indicators for the quality of our air, land, and water. NPRI information also helps to determine if regulatory or other action is necessary to ensure pollution reductions, and if so, the form that action should take."

- **5.85** The Minister of the Environment has discretion regarding industry reporting requirements. Environment Canada told us that oil and gas exploration and drilling activities are exempt from reporting to the NPRI.
- 5.86 According to Environment Canada, in order to consider whether changes to NPRI reporting requirements are warranted, the Department needs to know specifically what substances are used for hydraulic fracturing as well as their volumes and concentrations. Environment Canada and Health Canada told us that while a partial list of substances that are likely to be used in hydraulic fracturing has been developed, a complete list of substances used in Canada is not known.
- 5.87 Environment Canada informed us that it has initiated internal discussions on the NPRI review, but that official stakeholder engagement and consultations have not been initiated. Both Environment Canada and Health Canada told us that they consider hydraulic fracturing to be an emerging global issue that they are beginning to investigate. Environment Canada told us that it expects to complete the review and determine whether changes are warranted by March 2014.

Actions to date Responding to emerging risks

- 5.88 We asked Environment Canada and Health Canada what they have done to identify and assess the risks posed by hydraulic fracturing substances. They told us that, under the Canadian Environmental Protection Act, 1999 (CEPA 1999), they are able to consider new information and, if appropriate, assess and manage identified risks to protect human health and the environment. The departments informed us that they are following a three-step approach for responding to emerging issues, such as hydraulic fracturing:
 - identifying the substances being used,
 - assessing risks to the environment or human health, and
 - establishing control measures to manage the risks posed by substances determined to be toxic or capable of becoming toxic.
- 5.89 Step 1: Identifying the substances used for hydraulic fracturing in Canada. Environment Canada and Health Canada indicated that they are currently gathering information to develop a path forward for hydraulic fracturing substances, which may or may not include proceeding with risk assessments and risk management.

- 5.90 The departments told us that they are considering a voluntary survey of companies engaged in hydraulic fracturing to gather information on the substances and how they are being used. They expect to receive responses by the end of March 2013. Depending on the outcome of the survey, additional information may need to be gathered.
- **5.91** Step 2: Assessing the risks of substances used in hydraulic fracturing. The departments have developed a partial list of more than 800 substances known to be used or suspected to be used for hydraulic fracturing in the United States and parts of Canada. Officials told us that although the departments have not carried out risk assessments on the use of these substances for hydraulic fracturing, 33 of the substances on the list had previously been assessed as toxic in other applications (for example, benzene in gasoline).
- 5.92 According to officials, 190 of the substances known to be used or suspected to be used for hydraulic fracturing are also used in other applications in Canada. These applications are scheduled for risk assessment between now and 2020. However, the departments have not yet decided whether to carry out risk assessments of the substances when used for hydraulic fracturing. The departments informed us that a risk assessment typically requires a minimum of 18 months per substance, assuming that sufficient data is available and the necessary methodologies exist.
- 5.93 The substances being used for hydraulic fracturing represent a subset of the many substances being used in Canada. Health Canada and Environment Canada have committed to assessing about 4,300 substances currently used in Canada by 2020.
- 5.94 Step 3: Controlling the risks associated with toxic substances. Under CEPA 1999, Environment Canada and Health Canada are required to develop control measures for substances determined to be toxic or capable of becoming toxic. Control measures, such as regulations and pollution prevention plans, are intended to reduce the risks associated with the use and release of toxic substances. Environment Canada informed us that it takes about three years to establish control measures.
- 5.95 Officials also told us that these timelines could be accelerated where there is evidence of a significant emerging risk to human health or the environment. CEPA 1999 states that "the Government of Canada shall exercise its powers in a manner that protects the environment and human health [and] applies the precautionary

principle [such] that, where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation [...]."

New substances

- **5.96** Under CEPA 1999, companies intending to bring new substances into Canada must notify Environment Canada and Health Canada. The departments must assess new substances within a specific time frame.
- **5.97** Environment Canada and Health Canada informed us that they have carried out 27 such assessments related to industry notifications of new substances used for hydraulic fracturing. As a result of these assessments, the departments imposed restrictions on the manner in which two substances can be disposed of.

Other activities

- 5.98 The departments told us that they have undertaken a number of research projects to assess the impacts of hydraulic fracturing. For example, in November 2011, Environment Canada completed a report identifying the potential impacts of natural gas production on groundwater quality as well as scientific gaps, and in May 2012, Health Canada completed a report identifying the potential health hazards related to drinking water and ambient air.
- **5.99** In October 2011, the federal government commissioned the Council of Canadian Academies to assess the state of knowledge of potential environmental impacts from the exploration, extraction, and development of Canada's shale gas resources, as well as the state of knowledge of mitigation options for environmental impacts. The results of the assessment are expected in mid- to late 2013.

Council of Canadian Academies — An independent, not-for-profit corporation that supports science-based, expert assessments (studies) to inform public policy development in Canada.

Conclusion

5.100 Environment Canada and Health Canada told us that they are still working toward gaining a better understanding of the substances contained in hydraulic fracturing fluid and the risks associated with the hydraulic fracturing process. This information is expected to inform Environment Canada's review of the reporting requirements of the National Pollutant Release Inventory for the oil and gas sector.

About the Annual Report and the Petitions Process

Objective

The objective of this annual report is to inform Parliament and Canadians about environmental petitions. In accordance with section 23 of the *Auditor General Act*, Part I of the report describes the number, nature, and status of petitions received, and the timeliness of responses from ministers. Part II of the report provides an update on the federal government's responses to petitions on hydraulic fracturing.

Scope and approach

The annual report on environmental petitions summarizes the monitoring of the petitions process by the Commissioner of the Environment and Sustainable Development within the Office of the Auditor General of Canada.

Period covered by the report

This annual report on environmental petitions covers the period from 1 July 2011 to 30 June 2012. The work for this report was completed on 17 September 2012.

The environmental petitions process

The environmental petitions process was created in 1995 through an amendment to the Auditor General Act. The process is a formal yet simple way for Canadians to obtain responses from federal ministers to their questions, concerns, and requests related to environmental issues that are within the federal government's mandate. There are 27 departments and agencies currently subject to the process. Under the Act, the Commissioner of the Environment and Sustainable Development administers the process on behalf of the Auditor General, and is required to present to Parliament an annual report on petitions and responses, covering the 12-month period from 1 July to 30 June of the following year.

Any Canadian resident may submit an environmental petition, acting alone or on behalf of an organization, business, or municipality. Since the launch of the process in 1995, the Office has received more than 400 petitions. Topics have varied widely, from the impact of a development on a local stream to the right of all Canadians to a healthy environment. Petitioners have used the petitions process to ask for information, investigations, specific actions, and policy changes.

When a petition is received by the Office, the petition is forwarded to the federal ministers responsible for the issues raised. The ministers must reply in writing to the petition within 120 calendar days. Ministers are required to notify the petitioner before the end of this period if they do not expect to be able to meet the timeline. These requirements are clearly specified in the *Auditor General Act*, which states that ministers must respond to each petition. While ministers must answer a petitioner's questions in a timely manner, they have discretion with respect to taking action on the issues raised. The following table outlines the petitions process.

The environmental petitions process and the role of the Commissioner of the Environment and Sustainable Development

	Environmental petitions process			
Starting a petition	A Canadian resident submits a written petition to the Auditor General of Canada.			
Reviewing a petition	The Commissioner reviews the petition to determine whether it meets the requirements of the Auditor General Act.			
	If the petition meets the requirements of the Auditor General Act, the Commissioner will determine the federal departments and agencies responsible for the issues addressed in the petition; send it to the responsible ministers; and send a letter to the petitioner, listing the ministers to whom the petition was sent.	If the petition does not meet the requirements of the <i>Auditor General Act</i> , the petitioner will be informed in writing. If the petition is incomplete or unclear, the petitioner will be asked to resubmit it.		
Responding to a petition	Once a minister receives a petition, he or she must • send a letter, within 15 days, to the petitioner and the Commissioner acknowledging receipt of the petition; and • consider the petition and send a reply to the petitioner and the Commissioner within 120 days.			

Ongoing petitions activities				
Monitoring	Reporting	Posting on the Internet	Auditing	
The Commissioner monitors acknowledgement letters and responses from ministers.	The Commissioner reports to Parliament on the petitions and responses received.	The Commissioner posts petitions, responses, and summary information on the Internet, in both official languages.	The Office of the Auditor General considers issues raised in petitions when planning future audits.	

Source: Adapted from the Auditor General Act and Getting Answers: A Guide to the Environmental Petitions Process

To assist petitioners, the Office has produced Getting Answers—A Guide to the Environmental Petitions Process. The guide, available on the Office of the Auditor General website (www.oag-bvg.gc.ca), describes the process in more detail and includes information on

- · what kinds of requests can be made,
- · how to write and submit an environmental petition,
- · what the role of the Commissioner is, and
- what petitioners can expect from departments and agencies.

We also suggest a maximum of 5,000 words and no more than 20 questions or requests. While petitions exceeding those limits are acceptable and will be sent to departments for response, the Office reserves the right to not publish on its website petitions exceeding those limits. Since petitions remain the property of

petitioners, they are free to publish their petitions and the government responses in any manner they see fit. However, we recommend that they wait until the petition has been formally accepted and sent to the departments for response.

Petitions team

Principal: Andrew Ferguson

Directors: David Willey (Part I) and Doreen Deveen (Part II)

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For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

Appendix Petitions activity (1 July 2011 to 30 June 2012)

This appendix includes a summary of the petitions (follow-up and new issues) received during the activity period noted above. To access the full text of petitions and responses from the creation of the environmental petitions process in 1995 to 30 June 2012, go to the petitions catalogue on our website. If necessary, paper copies of the catalogue can be obtained on request.

Petition 3010: Follow-up petition on the alleged prisinterpretation of exclusion list conditions under the Canadian Environmental Assessment set related to the construction of a communications tower in Pontiac. Quebec

Date received: 30 December 2011

Petitioner: James Riordan

Summary: Following up on departmental responses to his previous petitions, the petitioner asks Industry Canada to provide the actual size of the project's "footprint" and to explain why the footprint does not include the land occupied by the project. The petitioner also asks Justice Canada about the interpretation of "footprint" under the Canadian Environmental Assessment Act's Exclusion List Regulations.

Issues: Environmental assessment, and science and technology

Federal departments responsible for reply: Industry Canada, Department of Justice Canada

Status: Completed

Petition 3108: Follow-up on the health and anynonmental hapact of endocrino disrupting substances in cosmetics

Date received: 30 November 2011

Petitioners: David Suzuki Foundation and Réseau des femmes en environnement

Summary: In this follow-up petition, the petitioners allege that Health Canada's response to Petition 310 regarding the presence of endocrine disrupting substances in cosmetics did not take into account the full priority list of suspected endocrine disrupting substances developed by the European Union in a series of studies since 2000. The petitioners also inquire whether the Department actively monitors international developments in endocrine disruption science and policy.

Federal department responsible for reply: Health Canada

Issues: Human and environmental health, and toxic substances

Status: Completed

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Pullion 31% Potential impact on amphibians and fish que to the application of posticions in the shoreline and wetlands of the Great Lakes

Date received: 13 July 2011 Petitioner: Nancy Moysiuk

Summary: The petitioner is concerned about the application of pesticides to control invasive plants in the shoreline and wetlands of the Great Lakes and its potential impact on amphibians and fish. The petitioner asks whether "temporary water" could also fit the definition of "sensitive aquatic habitat" under the Pest Management Regulatory Agency's classification of water bodies. The petitioner also asks whether the Pest Control Products Act and the Fisheries Act are being contravened by applying pesticides in and around such water bodies.

Issues: Biological diversity, pesticides, toxic substances, and water

Federal departments responsible for reply: Fisheries and Oceans Canada, Health Canada

Status: Completed

Petition 320. The posticide evaluation process under the Pest Control Products Act

Date received: 26 July 2011

Petitioner: West Coast Environmental Law

Summary: The petitioner seeks to understand how the Pesticide Management Regulatory Agency evaluates and approves pesticides, including which health effects are assessed and how user compliance with label requirements is taken into account. The petitioner also asks the Agency how it monitors the extent to which label requirements are being followed and how it determines the "acceptable value" of pesticides used primarily for cosmetic purposes.

Issues: Compliance and enforcement, human and environmental health, pesticides, and toxic substances

Federal department responsible for reply: Health Canada

Status: Completed

Petition 321. The impact of posticides on the health of farm workers and their families

Date received: 26 July 2011

Petitioner: West Coast Environmental Law

Summary: The petitioner seeks to understand the efforts of Health Canada's Pesticide Regulatory Management Agency to protect farm workers and their families from the impact of pesticides. The petitioner inquires whether the Agency considers both occupational and non-occupational exposure when assessing total exposure for farm workers. The petitioner also asks about Health Canada's research on the incidence of pesticide-related illnesses in infants and children of farm workers in Canada. In addition, the petitioner asks whether Health Canada provides translation of pesticide usage labels based on the language needs of migrant agricultural workers to minimize the risk of applying pesticides incorrectly.

Issues: Human and environmental health, pesticides, and toxic substances

Federal department responsible for reply: Health Canada

Status: Completed

Petition 322: Regulatory requirements for developmental toxicity testing of new and existing chemicals

Date received: 29 August 2011

Petitioners: Learning Disabilities Association of Canada and Canadian Institute of Child Health

Summary: The petitioners are concerned about regulatory requirements for developmental toxicity testing in Canada. The petitioners claim that the policies and regulations under the *Canadian Environmental Protection* Act, 1999 fail to adequately address the special vulnerabilities of children and fetuses in health risk assessments for new and existing chemicals. The petitioners ask the federal government about its plans for updating developmental test guidelines. The petitioners also ask about its research priorities for identifying effects from these substances, including endocrine disrupting chemicals.

Issues: Human and environmental health, and toxic substances

Federal departments responsible for reply: Environment Canada, Health Canada

Status: Completed

Petition 323: Environmental assessment of finfish (salmon) aquaculture in Nova Scotia

Date received: 22 September 2011

Petitioner: St. Mary's Bay Coastal Alliance Society

Summary: The petitioner raises concerns about the environmental assessment of finfish (salmon) aquaculture in St. Mary's Bay, Nova Scotia. In particular, the petitioner is concerned about the quality of the cumulative effects assessment, the extent to which the precautionary principle was applied, and a lack of information to assess the impact on lobster fisheries in the area. The petitioner also asks about the socio-economic impacts of salmon aquaculture in the region.

Issues: Environmental assessment, fisheries, and water

Federal departments responsible for reply: Atlantic Canada Opportunities Agency, Environment Canada,

Fisheries and Oceans Canada, Transport Canada

Status: Completed

Petition 324: Concerns about the re-evaluation of the pesticide dimethoate

Date received: 14 October 2011

Petitioner: West Coast Environmental Law

Summary: The petitioner is concerned about Health Canada's re-evaluation of the pesticide dimethoate. In particular, the petitioner is concerned about the data used to evaluate dosage risks, health risks to agricultural workers, environmental risks to aquatic and terrestrial biodiversity, and the potential cumulative effects when dimethoate is used with other pesticides. The petitioner is also concerned about the uncertainty in the post-application assessment of dimethoate use on crops, the clarity for pesticide use labelling, and the nature of consultations with agricultural workers.

Issues: Agriculture, biological diversity, human and environmental health, and pesticides

Federal departments responsible for reply: Health Canada

Status: Completed

Polition 375: Use of the Cosmetic Ingredient Hollist to manage potentially toxic and carcinogenic substances in cosmetics

Date received: 25 October 2011

Petitioners: Canadian Environmental Law Association and Chemical Sensitivities Manitoba

Summary: The petitioners are concerned about the use of potentially toxic and carcinogenic substances in cosmetic and personal care products, as well as the effectiveness of Canadian regulations and policies related to the management of those substances. The petitioners ask Health Canada about its decision-making process related to the Cosmetic Ingredient Hotlist, which restricts or prohibits certain toxic substances in cosmetics that may be harmful to human health. The petitioners also ask about the compliance of cosmetic manufacturers, importers, and distributors with notification requirements, and they raise concerns about public access to information.

Issues: Compliance and enforcement, human and environmental health, and toxic substances

Federal departments responsible for reply: Environment Canada, Health Canada

Status: Completed

Petition 326: Effectiveness of pollution provention aspects of the St. Lawrence Action Plan

Date received: 20 December 2011 Petitioner: A Canadian resident

Summary: The petitioner seeks information about federal funding in the various phases of the federal–provincial St. Lawrence Action Plan earmarked to decrease water pollution in the St. Lawrence River. In addition, the petitioner inquires about the pollution reduction results achieved by the plans, as well as the proportion of pollution coming from sources upstream of the St. Lawrence River. The petitioner also inquires about the effectiveness of action plans that aimed to reduce the impact of the agricultural use of pesticide and fertilizer on the river. Further, the petitioner asks about the criteria that the federal government uses to determine whether it is more effective to invest in one province or another for the optimal protection of aquatic ecosystems.

Issues: Agriculture, fisheries, and water

Federal departments responsible for reply: Agriculture and Agri-Food Canada, Environment Canada, Fisheries and Oceans Canada

Status: Completed

Petition 377 Environmental assessment of a project to deliver jet fuel to the Vancouver International Airport

Date received: 21 December 2011

Petitioner: Vancouver Airport Pipeline Opposition Richmond (VAPOR)

Summary: The petitioner is concerned about the environmental assessment of a project to deliver jet fuel to the Vancouver International Airport by ships and a pipeline. The petitioner expresses concern about the potential environmental impact that such a project could have on the Fraser River Estuary's ecosystems and on the municipality of Richmond, British Columbia. The petitioner asks why projects of this type do not trigger a public review under the Canadian Environmental Assessment Act and why, under harmonization agreements, the

federal government appears to allow its statutory responsibilities to be assessed by its provincial counterparts. The petitioner also asks why other delivery options have not been considered.

Issues: Environmental assessment, federal-provincial relations, toxic substances, transport, and water

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada,

Transport Canada

Status: Completed

Petition 328: Implementation status of the Wastewater Systems Effluent Regulations

Date received: 28 December 2011 Petitioner: Anthony Bratschitsch

Summary: The petitioner seeks information on the implementation status of the federal government's proposed *Wastewater Systems Effluent Regulations*. In particular, the petitioner inquires about changes to the regulations resulting from the consultation process and asks how the training, performance measurement, and enforcement aspects of the proposed regulations will be implemented. The petitioner also asks whether the federal government has compiled public health information for the purpose of establishing wastewater effluent standards.

Issues: Compliance and enforcement, human and environmental health, waste management, and water

Federal departments responsible for reply: Environment Canada, Health Canada

Status: Completed

Petition 329: Government of Canada actions and plans for climate change, environmental accounts, fossil fuel subsidies, fair trade procurement, and public consultation in preparing the government's position for Rio + 20

Date received: 29 December 2011

Petitioner: One Earth Initiative Society

Summary: The petitioner asks about the Government of Canada's consultation with the public and provinces in preparing its position prior to the 2012 United Nations Conference on Sustainable Development (Rio+20). The petitioner also seeks clarification about Canada's withdrawal from the Kyoto Protocol, about its future plans and regulations to reduce its greenhouse gas emissions, and about its reporting on reductions. The petitioner asks the government about its carbon pricing plans and how it measures financial assistance to the oil and gas sector. In addition, the petitioner asks whether the government intends to develop and use alternative measures, such as well-being indicators, in addition to traditional measures of economic activity, such as gross domestic product, and if it plans to integrate fair trade concerns into public procurement.

Issues: Climate change, federal–provincial relations, governance, international cooperation, and natural resources

Federal departments responsible for reply: Environment Canada, Department of Finance Canada, Foreign Affairs and International Trade Canada, Industry Canada, Natural Resources Canada, Public Works and Government Services Canada, Treasury Board of Canada Secretariat

Status: Completed

Petition 330: Federal environmental assessment of a highway expansion project in Ontario

Date received: 18 January 2012

Petitioner: Ryan Minor

Summary: The petitioner seeks clarification on how the federal government carried out an environmental assessment of the Highway 69 expansion project in Ontario. The petitioner is concerned that the federal government was unable to make a decision on the environmental assessment of the project as a whole and that it now plans to assess the highway expansion as five separate projects. The petitioner asks the federal government to explain its policy for determining the scope of highway projects under the Canadian Environmental Assessment Act.

Issues: Environmental assessment, and transport

Federal departments responsible for reply: Aboriginal Affairs and Northern Development Canada,

Fisheries and Oceans Canada, Transport Canada

Status: Completed

Potition 331: Funding for endangered freshwater fish under the Habitat Stewardship Program

Date received: 20 January 2012

Petitioner: A Canadian organization

Summary: The petitioner is seeking information about a funding decision under the Habitat Stewardship Program for Species at Risk (HSP). The petitioner has received HSP funding for projects related to the conservation of two endangered freshwater fish since the 2001–02 fiscal year, but did not receive funding for the 2011–12 fiscal year. The petitioner asks the federal government to explain the rationale behind its funding decision for these specific projects as well as the overall ranking and allocation of funds within the region and for projects on aquatic species. The petitioner also requests a list of all funded projects and the amount of funding allocated since the launch of the HSP.

Issue: Biological diversity, and fisheries

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada

Status: Completed

Petition 332: Alleged perfluorocarbon contamination at the Hamilton International Airport

Date received: 27 March 2012

Petitioner: Joe Minor

Summary: The petitioner is concerned about high levels of perfluorocarbons found in waters near the Hamilton International Airport and their potential impact on the environment and on human health. The petitioner believes that the contamination may be related to the prior use of fire-fighting foam that contained perfluorocane sulfonate (PFOS) at the airport, which is upstream of the Welland River and Lake Niapenco. The petitioner seeks information on the historical use of PFOS at the Hamilton International Airport and requests investigative action into possible infractions of the *Fisheries Act*. He asks the government to review the *Perfluorocane Sulfonate Virtual Elimination Act* and to review scientific literature to establish safe exposure limits. The petitioner also asks the government to identity other sites that may be potentially contaminated with PFOS.

Issues: Fisheries, governance, human and environmental health, and toxic substances

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Health Canada, National Defence, Public Health Agency of Canada, Public Works and Government Services Canada, Transport Canada, Treasury Board of Canada Secretariat

Status: Replies received but not yet posted

Petition 333: Federal support to facilitate a Property Assessed Payments for Energy Retrofits program

Date received: 28 March 2012

Petitioners: David McRobert, Legal Consultant; William E. Johnston M.A., LL.B.; Janet Gasparini; Love Energy Consultants; Sustainable Alternatives Consulting Inc.

Summary: The petitioners request a review of federal policies, legislation, regulations, and technical guidance to facilitate municipal implementation of a Property Assessed Payments for Energy Retrofits (PAPER) program. The petitioners describe potential benefits of a PAPER program for the federal government, including achieving targets for reductions in energy use and greenhouse gas emissions, as well as potential economic stimulus through job creation.

Issues: Climate change, federal-provincial relations, governance, and other

Federal departments responsible for reply: Environment Canada, Department of Finance Canada, Natural Resources Canada, Public Works and Government Services Canada

Status: Replies received but not yet posted

Petition 334: Environmental effects monitoring information and reports related to the *Metal Mining Effluent Regulations*

Date received: 10 April 2012

Petitioner: Mining Watch Canada

Summary: The petitioner is concerned about public access to environmental effects monitoring data related to metal mining. The petitioner also expresses concern about the extent of government reporting on the monitoring program overall. The petitioner asks Environment Canada whether the monitoring program results to date have led to site-specific remediation measures. In addition, the Department is asked how it implemented recommendations from a multi-stakeholder environmental effects monitoring review team in 2007.

Issues: Compliance and enforcement, fisheries, governance, and toxic substances

Federal department responsible for reply: Environment Canada

Status: Reply received but not yet posted

Petrtion 335: Energy etild only standards for nomostic gas water heaters

Date received: 13 April 2012
Petitioner: Tom Gibeault

Summary: The petitioner raises concerns about energy efficiency standards for domestic gas water heaters. The petitioner asks Natural Resources Canada about the process for updating the standard, including how stakeholder and public comments were dealt with. He also requests information about the decisions made regarding projects that were submitted under the ecoEnergy Innovation Initiative.

Issues: Climate change, and science and technology

Federal department responsible for reply: Natural Resources Canada

Status: Reply received but not yet posted

Polition 336: Federal policy, regulation, and approval regime for oil tankers in British Columbia

Date received: 16 April 2012

Petitioner: Ecojustice

Summary: The petitioner seeks clarification of federal policies, regulations, and the responsibilities of a number of departments for approving oil tanker operations in waters on the south coast of British Columbia. The petitioner is concerned about the potential risk of an oil spill and how it could affect the commercial, recreational, and ceremonial fisheries, as well as tourism in the Gulf Island communities. The petitioner also expresses concern about the risk such a spill could pose to Southern Resident Killer Whale populations and their habitat, which are protected under the *Species at Risk Act*.

Issues: Compliance and enforcement, governance, transport, and water

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada, Natural Resources Canada, Public Safety Canada, Transport Canada

Status: Replies received but not yet posted

Putition 337. Progress in complating the Bowie Seamount Marine Protected Area management plan and in extablishing a national system of marine protected areas.

Date received: 17 April 2012 Petitioner: WWF Canada

Summary: The petitioner asks Fisheries and Oceans Canada about the status of the Bowie Seamount Marine Protected Area management plan, which the federal government planned to complete within two years of its April 2008 designation as a marine protected area. The petitioner is also seeking information on the federal government's commitment to establish a national system of marine protected areas.

Issues: Biological diversity, compliance and enforcement, fisheries, and water Federal department responsible for reply: Fisheries and Oceans Canada

Status: Reply received but not yet posted

Petition 338: Alleged discharge of confaminated water into a drainage disch that empties into Lake Ontario

Date received: 14 June 2012

Petitioners: Alexander and Olivera Davidoff

Summary: The petitioners allege that contaminated water is discharging into a drainage dirch located behind a commercial building in St. Catharines, Ontario. The petitioners claim that the drainage ditch empties into Lake Ontario and are concerned about the potential impact of this discharge on the natural environment, including fish, fish habitat, and groundwater. The petitioners ask Environment Canada and Fisheries and Oceans Canada to investigate and to ensure that cleanup is carried out in a timely manner.

Issues: Fisheries, toxic substances, and water

Federal departments responsible for reply: Environment Canada, Fisheries and Oceans Canada

Status: Replies received but not yet posted

Petition 339: Potential impact on the environment of an animal-based diet, and potential health and environmental benefits of moving to a plant-based dist

Date received: 29 June 2012 Petitioner: Elena Gramma

Summary: The petitioner claims that livestock is a significant contributor to climate change and seeks information on the government's actions to educate Canadians on the potential impact of livestock on the environment. In addition, the petitioner asks about the government's actions to research the potential health and environmental benefits of plant-based diets and to inform Canadians on the matter.

Issues: Agriculture, climate change, and human and environmental health

Federal departments responsible for reply: Agriculture and Agri-Food Canada, Environment Canada,

Department of Finance Canada, Health Canada, Public Health Agency of Canada

Status: Replies pending





Report of the Commissioner of the Environment and Sustainable Development

The Commissioner's Perspective Main Points—Chapters 1 to 4 Appendix

Atlantic Offshore Oil and Gas Activities

Financial Assurances for Environmental Risks

Marine Protected Areas

A Study of Federal Support to the Fossil Fuel Sector

Environmental Petitions





